RAFFERTY-ALAMEDA PROJECT

ENVIRONMENTAL IMPACT STATEMENT

Souris Basin Development Authority

CHAPTER 17

RECREATION

RAFFERTY/ALAMEDA ENVIRONMENTAL IMPACT STATEMENT

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(a) RECREATION - GENERAL

INTRODUCTION

Some landscapes are naturally more attractive than others, encouraging visitors to enjoy the scenery, wildlife, shade and shelter, cooler temperatures, swimming, boating, fishing, or other pleasant features that the area has to offer. In southeastern Saskatchewan, the forested Moose Mountain upland remains a naturally attractive area for southern Saskatchewan residents and tourists.

Since the earliest days of settlement, people have travelled considerable distances to enjoy this area which stands in sharp contrast to most of the Souris Plains to the south and west. The largest lakes, Kenosee and White Bear, have had the highest level of activity, resulting in increasing demands for cottage lots, beach and picnicking facilities, campgrounds, and more and better services. Over time, basic visitor services have been supplemented by higher levels of service including golf courses, tennis courts, recreation and dance halls, restaurants, service stations, a variety of accommodation, sewer and water systems, and most recently, an outdoor water-slide complex.

In southeastern Saskatchewan there have been no comparably attractive options, either in 1886 or 100 years later, in 1986. Pressure for satisfying growing park and recreation demands in the Moose Mountain area has continued to increase over the decades while the actual resource has remained about the same. Further, the existing facilities are for the most part aged and require investment to bring them up to contemporary standards not only to attract new visitation but also to ensure continued domestic market satisfaction.

Demand for parks and water-based recreation now exceeds supply in this semi-arid part of the province and has done so for some time. New park and recreation developments in the Souris River Basin, keyed to the two new reservoirs and downstream within the Souris River Valley, will go far toward satisfying existing and future demands. There is strong, demonstrated market potential within existing visitation and good confidence levels are indicated for market expansion in new visitation.

EXISTING RECREATION FACILITIES

Local populations have access to a variety of indoor and outdoor recreational facilities. Only Estevan and Weyburn have sufficient population size to offer a wide complement of recreational facilities. The smaller centers depend on smaller town and country population bases to support their local facilities. Table 1 profiles the indoor and outdoor recreational facilities in the Study Area.

Most towns and villages include a skating rink and a curling rink. The only other indoor facilities are usually one or more meeting places, including the schools.

Outdoor facilities are more varied. Sports grounds, swimming pools and golf courses are the most frequent. Some centers have playgrounds, parks and tennis courts.

Moose Mountain Provincial Park represents a major year-round recreation destination area. As one of the oldest and largest Provincial Parks in Saskatchewan, it possesses a full complement of recreation opportunities including camping, hiking, swimming, golfing, fishing, boating, tennis, softball, snowmobiling, skiing, etc.

Saskatchewan Parks Recreation and Culture operates a small recreation site on the east side of Boundary Reservoir approximately 8 km southwest of Estevan. This site is a boating, swimming and picnicking site with docks, picnic tables and barbeques. It is estimated that 12,118 vehicles entered this site in 1986 which is down from the 14,523, 28,911 and 14,603 vehicles identified for 1979, 1980 and 1981 respectively (Saskatchewan Parks, Recreation and Culture, pers. comm.). Very low water levels in Boundary Reservoir is a major factor in its lower use. There are 48 cottages or residences in two subdivisions along the shores of the reservoir.

The White Bear Lake Resort, on the south side of White Bear (Carlyle) Lake, originated primarily as a summer cottage area with people attracted by the lake, a number of natural sand beaches and the cooler upland forest. The resort has been developed over the past number of decades to meet the needs of tourists as well. Campgrounds, picnic area, sports fields, food and other services and, most recently, a golf course have been established.

TABLE 1

Regional Infrastructure Profile
Indoor and Outdoor Recreational Facilities

(excluding Estevan and Weyburn)

	Bienfait	Carlyle	Lampman	Midale	Oxbow	Radville	Stoughton
INDOOR							
Skating Rink	1	1	1	1	1	1	1
Curling Rink	1	1	1	1	1	1	1
Theatre		1					
Auditorium/Gym		1					1
OUTDOOR							
Swimming Pool	1		1	1	1	1	1
Golf Course		1	1	1	1	1	
Playground		1					1
Park		1			1		
Tennis Courts			1			1	1
Sports Grounds			1	1		1	1
Camping			1				
Shooting Ranges							1

Source: adapted from 1985 Community Profiles, Saskatchewan Tourism and Small Business.

Note: Golf Courses also at Fillmore, Halbrite and Goodwater

Approximately 935 cottages are now located at the resort, considerably more than at Kenosee Lake to the north.

The Woodlawn Regional Park, along the heavily treed Souris River at Estevan includes a large serviced campground, a swimming pool, ball diamonds, soccer fields, picnic grounds, playgrounds, museum, and an 18 hole grass-green golf course. This regional park is supported by the City of Estevan and the Rural Municipalities of Estevan #5 and Benson #35.

The Nickle Lake Regional Park is located on the east side of the Nickle Lake Reservoir created on the Souris River approximately 10 km southeast of Weyburn. Trees have been established for shade and shelter for the large serviced campground, playgrounds, picnic grounds and sports fields. Fishing, boating and bathing are associated with the lake. A swimming pool and miniature golf course are located within the park. An 18 hole golf course is also located nearby on the northwest side of the lake. This Regional Park is supported by the City of Weyburn and four Rural Municipalities (R.M. Weyburn #67, R.M. Griffin #66, R.M. Lomond #37 and R.M. Wellington #97).

The Oungre Memorial Regional Park located on Long Creek near the junctions of highways 18 and 35, just north of Oungre is also supported by four Rural Municipalities (R.M. Cambria #6, R.M. Souris Valley #7, R.M. Lake Alma #8, R.M. Lomond #37) and the Village of Tribune. This Regional Park is somewhat unique in that it not only contains the expected recreational facilities and services such as campgrounds, sports fields, swimming pool, picnic areas and playgrounds, but it contains a bowling alley, curling rink, skating rink, laundromat and other services for the region.

The Bow Valley Regional Park on the banks of the Souris River near Oxbow contains a 9 hole sand-green golf course, playgrounds, sportsfields, ball diamonds, camp and picnic areas. Its facilities are less extensive than those of Woodlawn, Nickle Lake and Oungre Memorial Park.

The Dr. Mainprize Regional Park located in the Souris River Valley along #606 southwest of Midale is also a very significant local recreational area. It has a 9 hole sand-green golf course, campsites, ball diamonds, day use picnicking and playgrounds and other services. The Park was established in the late 1950's and dedicated to honour Dr. William Mainprize who served the region for over 60 years. This Regional Park was one of the first to be accepted into

the Provincial Regional Parks program in the early 1960's. It is supported by the Rural Municipalities of Cambria #6, Cymri #36, Lomond #37 and the communities of Midale, Macoun, Halbrite, Torquay, Goodwater and Colgate.

EXISTING PARK USE AND COTTAGING IN THE STUDY AREA

Moose Mountain Provincial Park, established in 1931, has been the most heavily used Provincial Park in the province for many decades. It traditionally receives 12 to 18 percent of all Provincial Park visitation in the Province (SPRC, 1986). Victoria Day to Labour Day visitation has tended to exceed a half million people since 1967. Use of the Park peaked in 1976 with an estimated 675,000 visitors utilizing the many park facilities on the north shore of Kenosee Lake. Yet with the exception of the resurgence of visitation last season, 1986, assumed to be largely associated with the creation of the new water-slide complex adjacent to Highway 9, park visitation has been on a relatively steady decline (Figure 1). This decline has generally been attributed to two factors: reduced visitor satisfaction associated with core area over-crowding; and low water levels in Kenosee Lake, resulting in less attractive water-based recreation and sport fishing. Camping at Moose Mountain Provincial Park has similarly declined since the peak years of 1979 and 1980 (Figure 2).

Summer cottages were first established at Kenosee Lake late in the 1890's by members of Cannington Manor Colony (Blood 1977). Nearby Cannington and White Bear Lakes became widely known for quality fishing serving residents of southeastern Saskatchewan, especially from communities such as Weyburn, Estevan, Carlyle, Oxbow, Carnduff, Redvers, Arcola, Stoughton, Lampman and Alameda. Urban and rural residents from these ten communities now own 655 cottages within Moose Mountain Provincial Park and the White Bear Lake Resort (SPRR 1986, White Bear Lake Resort 1987). They represent nearly half of the current 1383 cottages at the two resorts. Next to Weyburn area residents who have 207 cottages there, Regina is the second largest group of cottage owners with 166. Estevan and area residents own 99, Oxbow 47, Redvers 39, Carnduff 36, Stoughton 27, Arcola 26, Alameda 20 and Lampman 20. Residents of

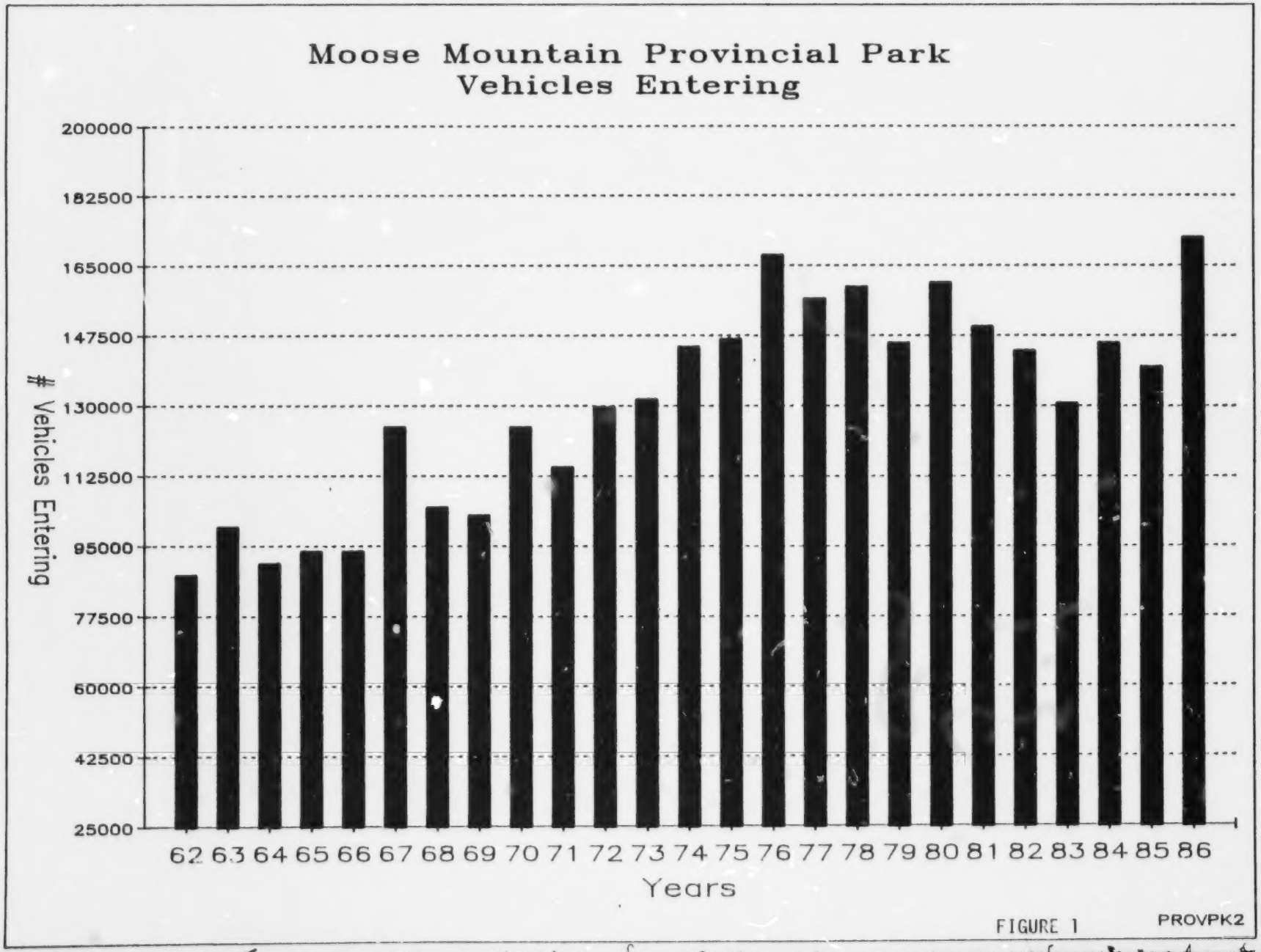


FIGURE 1 PROVPK2

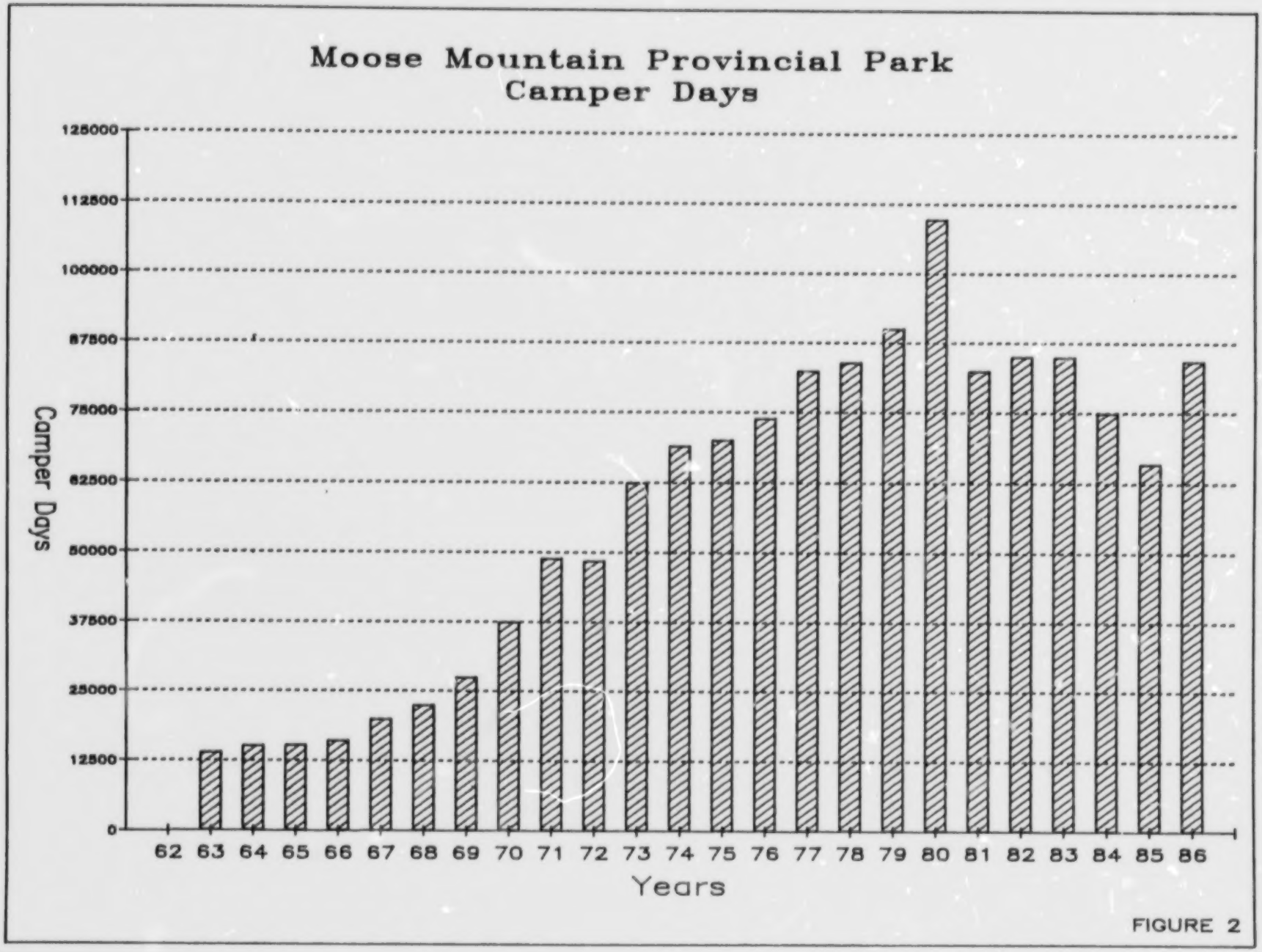

Moose Mountain Provincial Park
Camper Days
125000
112500
100000
87500
75000
62500
50000
37500
25000
12500
0
Camper Days
62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86
Years

FIGURE 2

these communities will be as close, or closer, to the new Alameda and Rafferty Reservoirs.

These two reservoirs will add a completely new dimension to outdoor recreation opportunities in southeastern Saskatchewan. While a number of smaller Regional Parks, Community Parks and Recreation Sites have been established in the past 25 years in an attempt to satisfy growing outdoor recreation demands, none have been able to provide acceptable water-based alternatives to the heavily used Kenosee and White Bear Lakes.

WATER SURFACE COMPARISONS

The Rafferty and Alameda Reservoirs will more than double the surface area of all existing lakes and reservoirs in the Study Area (See Table 2).

Even on a province-wide basis these new reservoirs will be significant (Figure 3). Rafferty will be larger than the newly created Codette Reservoir on the Saskatchewan River at Nipawin. At the Initial Operating Level, 4,545 ha, the Rafferty Reservoir will be the third largest artificial impoundment in Saskatchewan. It will be one-tenth the size of Lake Diefenbaker (43,700 ha), the largest in the province and nearly one-sixth the size of Tobin Lake (30,365 ha). It will become the largest water body in the Souris Basin, being more than three times the size of Kenosee and White Bear Lakes combined.

The Alameda Reservoir will be comparable in size to Round and Crooked Lakes in the eastern portion of the Qu'Appelle Valley, both of which have extensive cottage and water-based recreation developments.

At its Full Supply Level, at 1,340 ha, the Alameda Reservoir will be nearly one-third the size of Rafferty, larger than either Kenosee or White Bear Lakes, and more than double the size of Boundary Reservoir. Combined, these two new reservoirs will create very significant new opportunities for water-based recreation such as fishing, boating, sailing and water-skiing. They will also offer new opportunities for related land-based activities including, cottaging, camping, picnicking, photography, wildlife appreciation, scenic viewing and hunting.

A significant recreational side benefit of the two dams and reservoirs will accrue to the Souris River Valley and park developments downstream. With

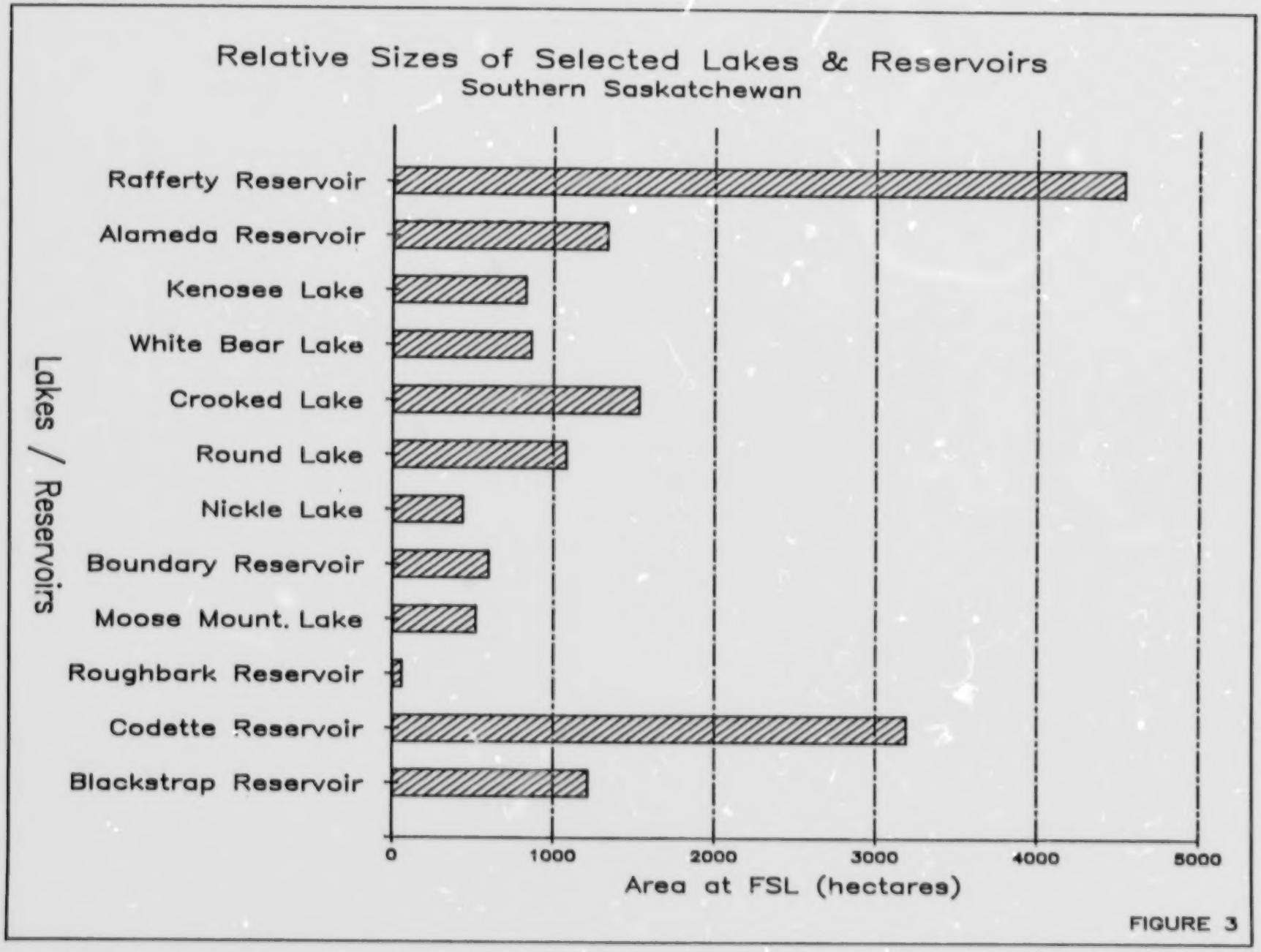

Relative Sizes of Selected Lakes & Reservoirs
Southern Saskatchewan
Rafferty Reservoir
Alameda Reservoir
Kenosee Lake
White Bear Lake
Crooked Lake
Round Lake
Nickle Lake
Boundary Reservoir
Moose Mount. Lake
Roughbark Reservoir
Codette Reservoir
Blackstrap Reservoir
Lakes / Reservoirs
0
1000
2000
3000
4000
5000
Area at FSL (hectares)

FIGURE 3

improved and more constant river flows, with reduced peak maximum and increased minimum flows (which were often zero flows during droughts) and improved water quality, the Souris River will become much more attractive for riverine recreational activities and nature study. This 115 km reach of the Souris Valley is one of the most diverse, ecologically, in the province, having a much greater variety of flora and fauna than either of the proposed reservoir areas upstream.

TABLE 2

COMPARATIVE SIZE AND DISTANCE TO SELECTED MARKETS FROM PROPOSED RESERVOIRS

Existing Lakes or Reservoirs	Size at FSL		Approximate Distance From Urban Centre (km)		
	ha	acres	Estevan	Weyburn	Regina
White Bear	870	2,150	135	135	200
Kenosee	835	2,065	135	140	200
Boundary Reservoir	600	1,485	15	95	215
Moose Mountain	525	1,295	80	80	125
Nickle Lake	445	1,100	75	15	120
Cannington	160	395	145	145	210
Sub-Total	3,435	8,490			
Proposed Reservoirs					
Rafferty	4,545	11,230	15	40	150
Alameda	1,340	3,310	60	150	265
Sub-Total	5,885	14,540			

Development of nature-oriented outdoor activities along the lower Souris, from Estevan to the U.S. Boundary, could include canoeing, primitive camping, hiking, photography and nature interpretation. Facilities may include primitive campsites, points of public access, hiking trails with interpretive facilities to explain flora and fauna, topographic features and archaeological and historical sites in the area. One major requirement for enhanced

recreational opportunities will be the maintenance of certain minimum flows in the Souris River to accommodate canoeing. The Rafferty and Alameda Dams will enable this form of water flow management through releases from the reservoirs. Without the reservoirs there is no such opportunity for downstream water management.

Blood (1977) indicated that one area of the Basin which stands out for its combined ecological, aesthetic, recreational, historic and archaeological value is the Roche Percee-Pinto area and downstream along the Souris to at least a point south of Hirsch. Angling and canoeing opportunities are among the best in the otherwise very limited opportunities available in the Basin. There is an abundance of historic and archaeological sites in and adjacent to the area including rare petroglyphs, the Boundary Commission Trail, and the Short Creek NWMP Post. Blood also suggested that the area warranted Provincial Park status.

Saskatchewan Parks, Recreation and Culture (SPRC) (previously Parks and Renewable Resources) has recently established a Park Systems Master Plan for the province. It has recommended the creation of another Provincial Park in southeastern Saskatchewan, partly to meet current and future unsatisfied needs, and partly to relieve existing use pressures on Moose Mountain Provincial Park.

While the creation of the two new reservoirs may temporarily divert some sport fishing, boating, cottaging and other recreational activities from Kenosee and White Bear Lakes, increased visitor satisfaction at these two older, established resorts will ultimately lead to renewed visitation by many former recreationists who have not visited those areas as often in the past decade.

RESERVOIR CHARACTERISTICS

The natural recreational attractiveness of any large water body is primarily related to its relative size, water quality during the recreation season, reliability and fluctuation characteristics and, to a lesser extent, factors such as backshore conditions, sport fishery and scenic attractiveness.

The Rafferty and Alameda Reservoirs will become the two largest water bodies in the Souris Basin. During the summer recreation season, Rafferty will normally fluctuate less than one meter (Figure 4). Fluctuation of the Alameda Reservoir will be slightly greater, particularly so after irrigation development has taken place (Figure 5).

Over a number of dry years with little or no spring runoff, Rafferty elevations are expected to recede. Within normal operating levels (550 to 545 m) the reservoir length will not be significantly affected as the valley bottom profile in the upper reaches is significantly steeper than in the lower reaches of the reservoir. At such elevations, boating, fishing and other water-based activities will not be hampered. Should reservoir elevations recede below 542 m, water-based recreation activities will be restricted to the lower reaches of the reservoir. Recreational attractiveness of the reservoirs will obviously be less than optimal during the reservoir filling period however the new opportunities for water-based activities such as motor boating, water skiing and sailing will likely be acted upon as soon as physically possible.

As with all new prairie reservoirs exposed to prevailing winds, there will be varying degrees of shoreline erosion over time. Exposed promontories with long fetches and exposure to prevailing winds will be most quickly and significantly effected. Such erosion will lead to increased turbidity, especially in the immediate offshore zones following high wave action associated with storms. Erosion will be much less in other areas, approaching zero in the more protected embayments and shallows. Once the reservoir reaches Full Supply Level, normal wave action along the bouldery till shorelines is expected to create a rocky, natural rip-rap foreshore. When this occurs turbidity conditions in Rafferty are expected to be similar to other prairie lakes and reservoirs. Occasional and severe summer wind storms will increase turbidity conditions for short periods but these conditions are not expected to

RAFFERTY RESERVOIR ELEVATION

FSL = 550.5

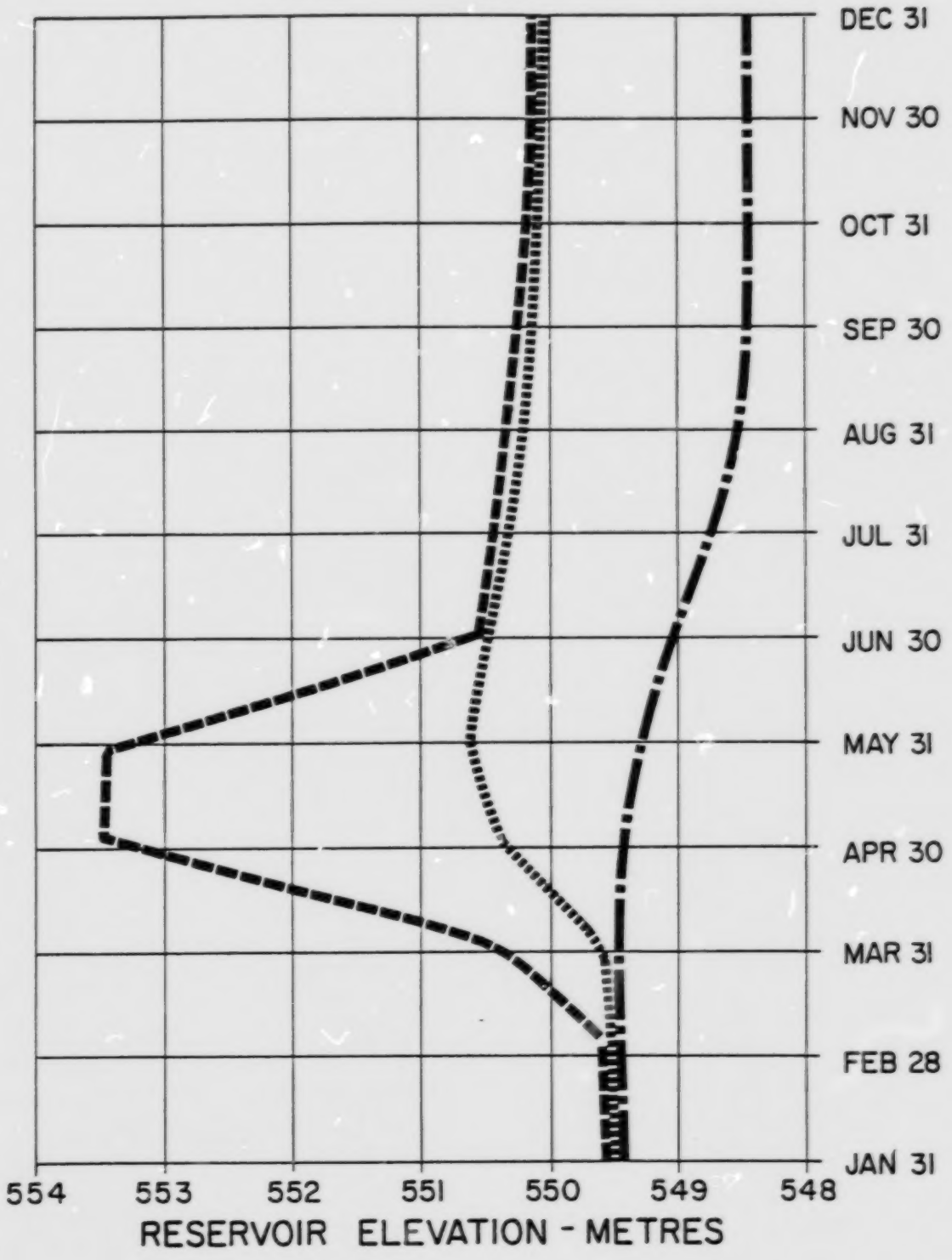


FIGURE 4

ALAMEDA RESERVOIR ELEVATION

FSL = 574.0

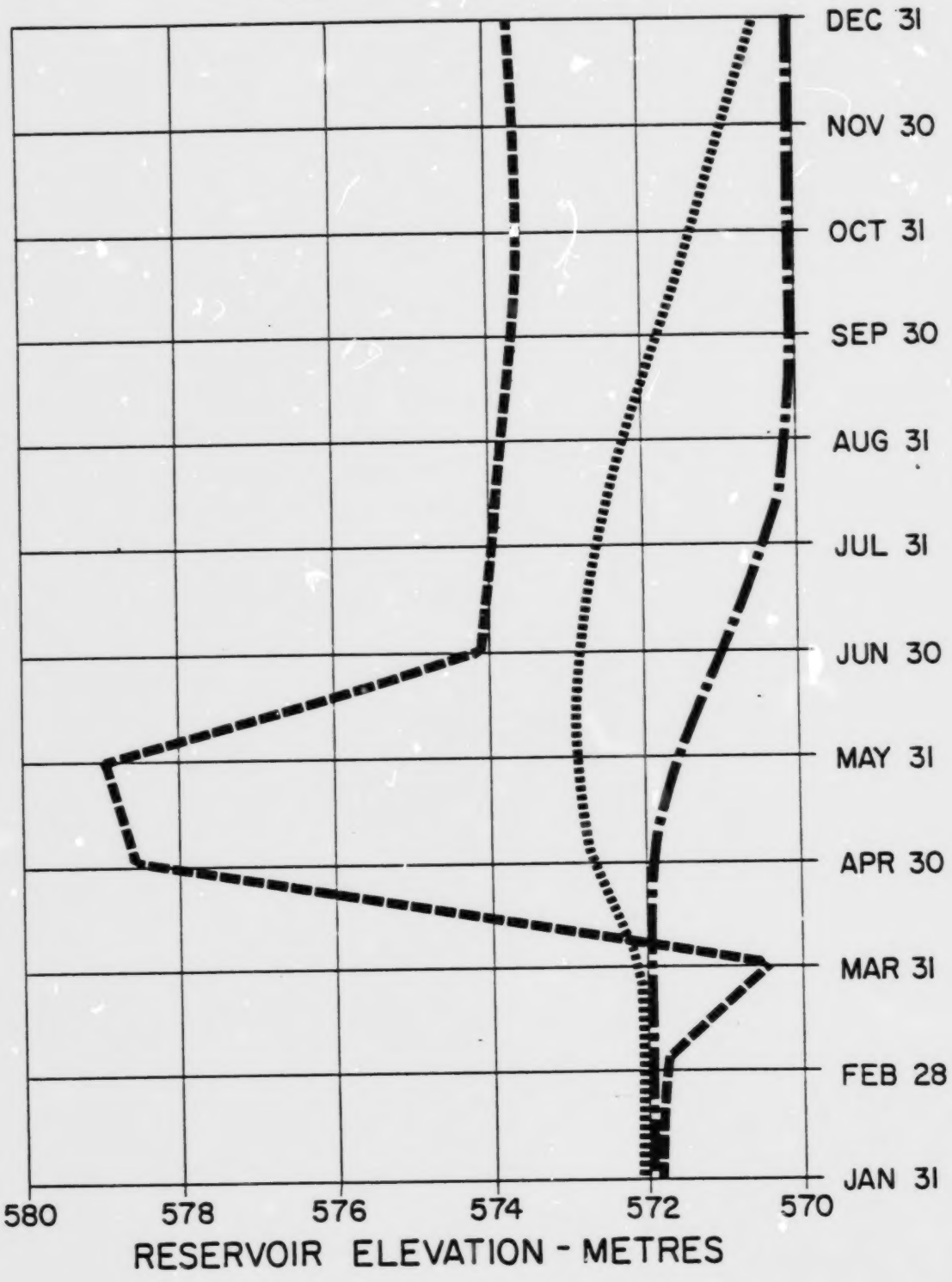


FIGURE 5

reduce the overall recreational attractiveness of the new reservoirs in the longer term.

In order to accommodate normal reservoir fluctuations, boat launch sites, piers and marinas will be located where water depths are better assured. Cottages and park facilities in the lower Rafferty area will be located where reservoir depths are greatest. The gradients of the valley bottom in the Alameda Reservoir are much steeper and the reservoir will be significantly deeper at all times. In addition, annual replenishment from the upper drainage basin of Moose Mountain Creek is more assured.

Park land development and public boat launch or marina facilities on the Alameda Reservoir will be similarly restricted to areas of deep water and steeper shorelines where normal seasonal reservoir fluctuations will not have a serious negative impact upon recreational activities. The water quality associated with these two new reservoirs is expected to be equivalent to other prairie lakes and reservoirs (see Water Quality Section of this Environmental Impact Statement). As such, reduced water quality due to algae blooms in late summer could have negative effects on lake-oriented recreation activities. Algae blooms are common in southern Saskatchewan lakes and reservoirs, especially during periods of reduced inflows such as the 1930's.

FACTORS AFFECTING TOURISM AND RECREATION MARKETS

The Canadian Government Office of Tourism (CGOT, 1974) set out some long-term trend predictions for Saskatchewan for the period 1971 to 2001. They considered five major economic and social factors including:

1. Population: projected no increase in population but noted an age distribution change as the population aged.
2. Population Shift: projected a one percent decline in Saskatchewan population over 30 years while B.C., Ontario and Canada as a whole would experience tremendous growth resulting in more Canadians travelling.
3. Urbanization: assumed that urbanization trends would continue which increases the ability and propensity to travel.

4. Real Disposable Income: assumed real G.N.P. growth of three percent per year over the 30 year period resulting in an increase of families economically able to travel.
5. Weekly working hours: projected an increase in leisure time and more flexibility in its use, spreading use throughout the week and the year.

As a result of these factors, the C.G.O.T. Study projected dynamic growth for tourism in Saskatchewan.

RECREATION MARKET TRENDS

There continues to be a substantial movement toward more leisure time: it remains a steadily growing influence upon recreation use. Increased emphasis is being placed upon health and physical activity as well as on activities which focus upon family and friends. Not only are more people participating in more activities (incidence) but they are participating more often (frequency). Greater recreation emphasis is being placed upon the self with focus on the development of skills, experience and personal achievement.

New social themes which have developed include a focus on physical fitness and quality of life. Increased leisure time results from longer paid vacations, shorter work weeks, earned days off, flex-time, job sharing and early retirement. New pursuits which are becoming major areas of interest include nature interpretation and other non-consumptive uses and educationally-based pursuits such as touring, visiting museums or historic sites, attending exhibits or cultural and special events, and discovering the environment.

With more long weekends and earned-days off, more people are taking weekend trips, usually closer to home than for the two or three week annual vacation.

While overall population growth in Saskatchewan has been very slow, there has been a steady increase in the number of households (215,759 in 1971 and 245,675 in 1981). This results in an expanding potential recreation client group. There are more single parent families, more couples with no families or small families and more "empty-nesters" (couples whose families have left home early). New household formations in the 20-30 age group are amongst the group

who actively seek recreational opportunities. Young married adults today are usually much freer to enjoy travelling and recreational pursuits than their parents had been in the 1950's or '60s, or their grandparents before that.

Couples with children are able to participate increasingly in a variety of recreational activities as family size decreases. Such families are able to devote more of their disposable income to higher quality recreation activities and facilities.

As the population ages, more attention must be given to the demands of older clientele. These people are not constrained in their travels by the school year, and they are free to select times when facilities are not crowded. There will be an increased demand for high quality accommodation and restaurants, packaged bus tours, passive recreation, retirement homes and shoulder season activities. Parks of the future will have to satisfy these demands.

Although completed in 1979, the Qu'Appelle Recreation Survey remains one of the most comprehensive surveys of outdoor recreation use in the province. Unlike tourism studies, this survey provided insight into those outdoor recreation activities often associated with provincial parklands. Figure 6 and 7 illustrate summer and winter activity participation rates as percentages of resident participation and as mean annual number of activity days. It is to be noted that activities such as bicycling, walking and nature appreciation have reached or surpassed some of the older, traditional activities of camping, picnicking, swimming in a lake or river, or driving. The 1979 survey further indicated that the recreationing public participates in a larger number of activities (14 activities with over 25 percent participation rates). In addition, 16 activities had 7 or more annual number of activity days.

The 1982 Canadian Travel Survey provides one of the most complete reviews of Canadian travel. While overall use has changed since 1982, some fundamental patterns remain the same. In 1982, it was found that residents of the three prairie provinces travelled more per capita than any other region of Canada. In fact, residents of Saskatchewan travelled more per capita than any other province. Of all trips taken away from home, 86 percent were for trips less than 320 km and only 17 percent of all trips were outside the province. Saskatchewan residents exhibited the highest propensity to take trips of one or

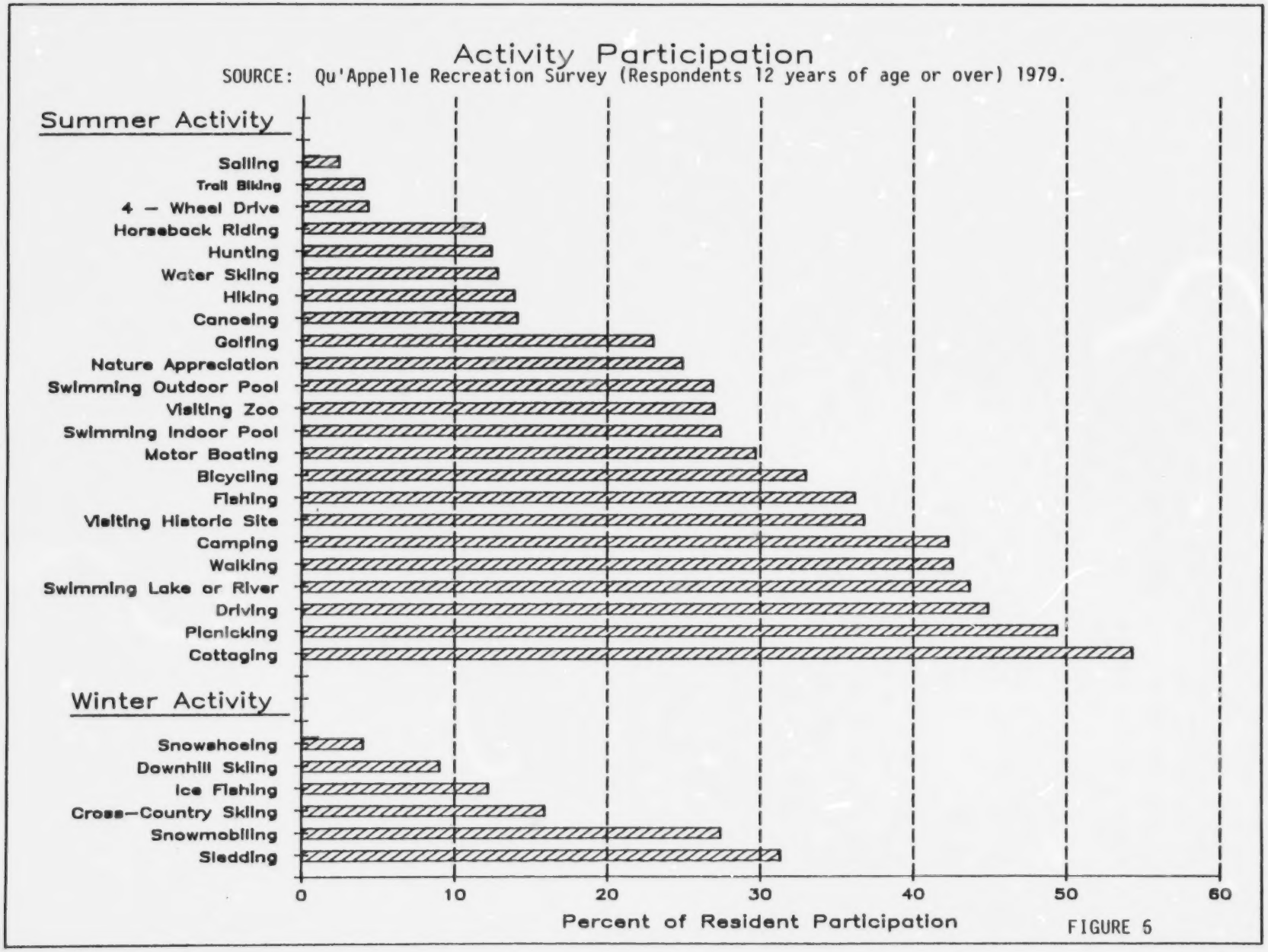
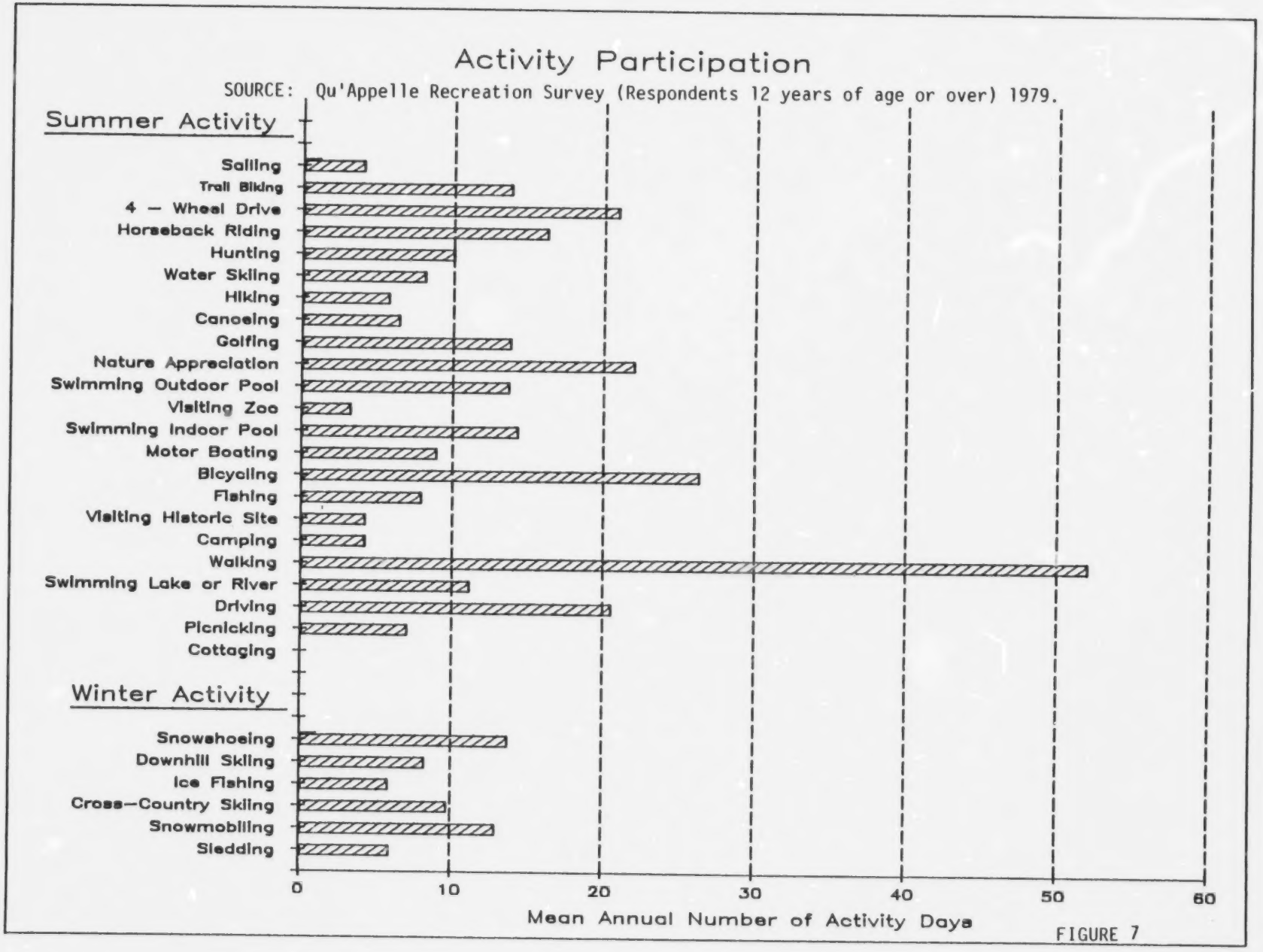

Activity Participation
SOURCE: Qu'Appelle Recreation Survey (Respondents 12 years of age or over) 1979.
Summer Activity
Sailing
Trail Biking
4 — Wheel Drive
Horseback Riding
Hunting
Water Skiing
Hiking
Canoeing
Golfing
Nature Appreciation
Swimming Outdoor Pool
Visiting Zoo
Swimming Indoor Pool
Motor Boating
Bicycling
Fishing
Visiting Historic Site
Camping
Walking
Swimming Lake or River
Driving
Picnicking
Cottaging
Winter Activity
Snowshoeing
Downhill Skiing
Ice Fishing
Cross—Country Skiing
Snowmobiling
Sledding
0
10
20
30
40
50
60
Percent of Resident Participation

FIGURE 6


Activity Participation
SOURCE: Qu'Appelle Recreation Survey (Respondents 12 years of age or over) 1979.
Summer Activity
Sailing
Trail Biking
4 — Wheel Drive
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Hunting
Water Skiing
Hiking
Canoeing
Golfing
Nature Appreciation
Swimming Outdoor Pool
Visiting Zoo
Swimming Indoor Pool
Motor Boating
Bicycling
Fishing
Visiting Historic Site
Camping
Walking
Swimming Lake or River
Driving
Picnicking
Cottaging
Winter Activity
Snowshoeing
Downhill Skiing
Ice Fishing
Cross—Country Skiing
Snowmobiling
Sledding
0
10
20
30
40
50
60
Mean Annual Number of Activity Days

FIGURE 7

more nights per person away from home of all Canadians (5.40 nights compared to a Canadian average of 2.82 nights).

In 1982, an estimated 466,000 person-trips were made by Americans to Saskatchewan, representing six percent of all visitors from all origins. North Dakota, Montana and Minnesota were estimated to contribute 104,000, 60,600 and 59,000 visitors in 1982.

The proximity of these three States to southeastern Saskatchewan in general, and to the Rafferty/Alameda Projects in particular, suggests that more Americans could be attracted. The most favoured activities of United States visitors in 1982 included bicycling, boating, water skiing and continuing education. Amongst the strongest travel motivators were rural sightseeing, historical sites, museums and special events. Camping, fishing and hiking were traditional activities of interest.

These trends have implications for parks and recreation planners. Among the most important are the following:

- o Provincial Parks can continue to expect a steady pattern of use as leisure trends continue to emphasize recreation pursuits;
- o emphasis of development must change in parks to include non-traditional items such as education, physical fitness and themes. More variety will be sought by recreationists in the parks;
- o park users are becoming more discriminating and selective and will not tolerate parks in disrepair;
- o increased demands for shoulder season park use can be expected;
- o park facilities will need to become more sophisticated and provide high quality experiences for all age groups; and
- o care will need to be taken to ensure that parks remain accessible to all socio-economic levels of society.

MARKET AREAS FOR RAFFERTY AND ALAMEDA RESERVOIRS

The population within 80 km (50 mile) and 160 km (100 mile) radii of the reservoirs was determined as an indicator of market potential for recreational opportunities. These market areas extend well into Manitoba, North Dakota and

Montana as well as covering the southeastern corner of the Souris Basin in Saskatchewan.

The populations for the 80 km and 160 km zones, are shown in Table 3. As the two reservoirs are within 80 km of each other, an arbitrary line was drawn between the market areas of each reservoir to establish, initially, exclusive market area populations.

There is an existing population of 66,600 within 80 km of the two reservoirs, two-thirds of that population being closer to Rafferty than to Alameda. About one-third of the total population within the 80 km zone is accounted for by the cities of Estevan and Weyburn with a combined population of about 21,000. Both of these cities are located within 40 km (25 miles) of Rafferty. Although Rafferty is the closer to the concentration of demand for recreational opportunities, Alameda is only slightly further away.

The 80 to 160 km zone contains nearly 350,000 people; over half are within Regina and surrounding satellite communities in the 160 km range northwest of Rafferty Reservoir. Alameda's potential market area includes a sizeable population in adjacent North Dakota. Ward County, including the City of Minot with a population approaching 50,000, lies within the 160 km range to the south of the proposed Alameda Reservoir. The Rafferty Reservoir is only slightly further away. With all the publicity and support for the Rafferty/Alameda Project in Minot, there could be added incentive...for many North Dakota residents...to visit and actually see the dams and reservoirs.

With the City of Estevan having additional support services such as motels, restaurants, service stations and shopping, one can expect many Minot residents would travel the extra few miles to reach the larger Rafferty Reservoir. The current value of the American dollar coupled with low in-province travel costs makes Saskatchewan a good value for American visitors. Although investment in services at both reservoirs will eventually be required to capitalize upon the tourism potential, the scenario for increased income and employment for the area as a result of this sector development is good.

TABLE 3

POTENTIAL MARKET POPULATIONS

(in 1000's)

	Sask	North Dakota	Manitoba	Montana	Total
A) 0-80 km Zone					
Rafferty	36.0	6.5	-	-	42.5
Alameda	17.0	5.6	1.5	-	24.1
Sub-Total	53.0	12.1	1.5	-	66.6
B) 80-160 km Zone					
Rafferty	206.0	19.5	-	5.0	230.5
Alameda	20.0	68.5	27.5	-	116.0
Sub-total	226.0	88.0	27.5	5.0	346.5
C) TOTALS 0-160 km	279.0	100.1	29.0	5.0	413.1

In total, a population of greater than 400,000 lies within 160 km (100 miles) of the proposed Alameda and Rafferty Reservoirs. This population represents a significant base which would be within two hours drive. There would appear, therefore, to be more than an adequate population base to enjoy recreational benefits when the reservoirs are developed to offer a full range and variety of opportunities.

Significantly, nearly one-third of this population base within 160 km is located outside Saskatchewan, mainly from North Dakota. New visitation to either reservoir by Americans represents an import of tourists, a major objective of the Saskatchewan Tourism policy. With 83 cottages at Moose Mountain Provincial Park and White Bear Lake Resort already owned by North Dakotans, it is apparent that this market potential is real and can be exploited to advantage.

Traditionally, all major tourist travel routes through Saskatchewan have been East-West. Most notable of these are the Trans-Canada Highway and the Yellowhead Route. Recently, Tourism Saskatchewan has been attempting to attract tourists to other routes including the more northerly Kelsey Trail and the southern East-West Red Coat Trail (Highway 13). Efforts are being made to strengthen north-south tourism travel along Highway 6 (the Can-Am Highway), Highway 9 and Highway 39, but these routes currently lack sufficiently strong market attraction. The Rafferty and Alameda Reservoirs are centrally located near these routes. New tourism related facilities and water-based recreation opportunities will enhance promotion efforts for southeastern Saskatchewan.

WATER-BASED RECREATION OPPORTUNITIES

The Souris Basin in southeastern Saskatchewan near Estevan and Weyburn is very poorly provided with water bodies providing opportunities for water-based recreation activities. Boundary Reservoir on Long Creek, near Estevan, Nickle Lake on the Souris River near Weyburn, and the Souris River itself, (including Dead Lake and McDonald Lake) are the only sizeable water bodies in the Rafferty Project Area.

Even where reservoirs have been created or where the river flows, recreational areas have required artificial improvements for swimming. The Woodlawn Regional Park in the Souris Valley just south of Estevan has developed a rectangular swimming pool, as the Souris River is unsuitable for swimming. Similarly, upstream a 'lagoon' type of swimming pool was developed at Dr. Mainprize Regional Park. There, the water from the river is used following filtration and treatment. Swimming pools have also been developed at the Oungre Memorial Regional Park along Long Creek and at Nickle Lake Regional Park, downstream from Weyburn.

Most major parks in the province are developed in close association with water, if it is available. Communities make the best possible use of the water resource at hand. If it is inadequate for swimming or boating or fishing, they place their picnic grounds, campgrounds, hiking trails, bicycle paths and cottages in view of the creek, river or water body, if at all possible.

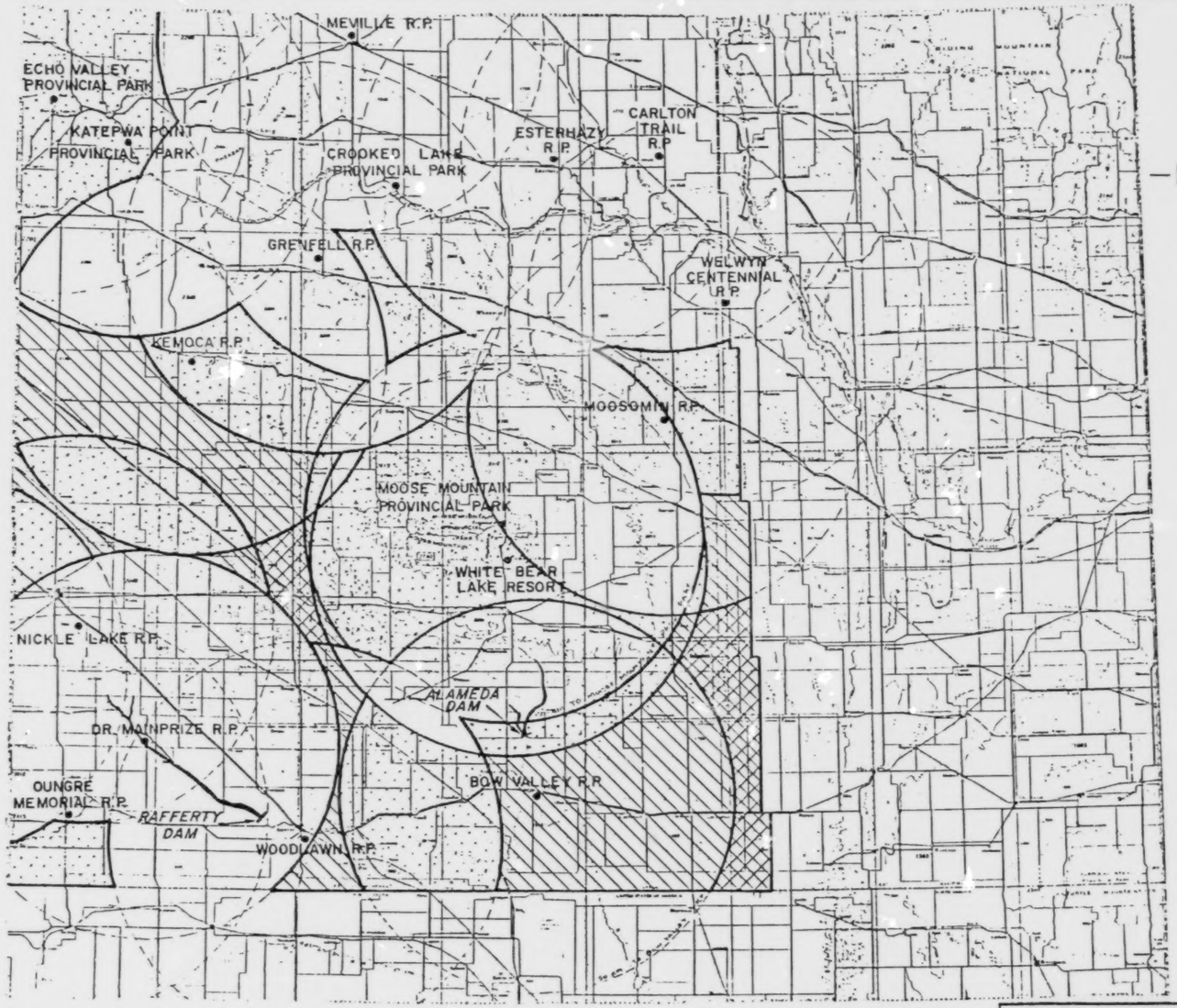
Capability of the landscape for outdoor recreation has been mapped under the ARDA, Canada Land Inventory (CLI) program; published maps (1:250,000 scale) are available for the Basin. Blood (1977) pointed out that almost all of the southwest portion of the Souris Plain received a low capability (Class 6) rating. Better ratings are largely restricted to valleys of the mainstem of the Souris below Weyburn, and lower portions of the larger tributaries. These are predominantly Class 4 and 5 (Moderate and Moderately Low Capability).

Outdoor recreation capability in southeast Saskatchewan is strongly correlated with the presence of sizeable water bodies. The only CLI Class "2" Recreation lands (High Capability) are on lakeshores (Kenosee and White Bear Lakes in the Moose Mountain Upland) and almost all Class "3" lands (Moderately High Capability) are located around natural lakes or man-made impoundments. Lands around impounded waters received higher CLI ratings than lands along rivers or streams. The Boundary Reservoir foreshore and Moose Mountain Lake are examples of Class "3" ratings.

Blood (1977) concluded that outdoor recreation potential in the Souris Basin is very strongly water-oriented, and that water development or management projects have a great potential for affecting recreation opportunities.

The demands for outdoor recreation and cottage lots have been so great that many campsites and cottage subdivisions have been forced to be located some considerable distances from Kenosee Lake in the Provincial Park. Public use of the shore and backshore areas along the north side of the lake has been concentrated into a very small area, approximately 10 km^2. With 500,000 to 600,000 visitors between Victoria Day and Labour Day, (approximately 100 days) densities average 500 to 600 persons per km^2 all summer. In comparison, the majority of the remaining 385 km^2 of the Provincial Park receives very little public use.

Despite the development of a number of Regional Parks in southeastern Saskatchewan to complement the White Bear Lake Resort and Moose Mountain Provincial Park, some communities remain poorly served. Figure 8 indicates that large segments of the Study Area are served by only one or two major parks within 50 km. Two areas, (one near Stoughton, the other in the Gainsborough-Fertile-Antler area along the Manitoba border) are served by no major parks within 50 km.



LEGEND

- AREAS SERVED BY 3 OR MORE PARKS WITHIN 50 KMS
- AREAS SERVED BY 2 PARKS WITHIN 50 KMS
- AREAS SERVED BY 1 PARK WITHIN 50KMS
- AREAS WITH NO PARKS WITHIN 50 KMS

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FIGURE 8

SOURIS BASIN DEVELOPMENT AUTHORITY

RAFFERTY / ALAMEDA PROJECTS

RAFFERTY/ALAMEDA DAMS
RESERVOIR
MITIGATION
PROVINCIAL/REGIONAL PARKS

PROP.	UNIT	SYST.	FUNC.	SERIAL	REV
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Creation of these new, large Rafferty and Alameda reservoirs will result in new outdoor recreational activities and travel patterns. Establishment of the reservoirs will lead to demands for services. Campgrounds, cottage lots, picnicking facilities, sport fields, hiking and riding trails and comprehensive support services will be required; e.g. access roads, parking, electricity, telephone service, sewer and water services, food services and accommodation. Public sector investment in basic infrastructure, services and public facilities can trigger proportionately larger private sector investment. Opportunities will result from the demands for higher levels of service and these may take the form of private investment initiatives in cottage subdivisions, boat marinas, food services, restaurants, lodging, and campgrounds.

The Rafferty reservoir, including the flood diversion channel from Boundary Reservoir, will significantly reduce flooding problems and associated clean up costs on all downstream recreation areas - Woodlawn Regional Park, Roche Percee Recreation Site, the Souris #9 Recreation Site and Bow Valley Regional Park. Improvement to the summer flows of the Souris River downstream from both dams will also improve canoeing, fishing, and other recreational potential in that reach of the river. Overall, the aesthetic appeal of the region will be enhanced, serving to reinforce desirability of developed destination areas.

COTTAGING OPPORTUNITIES

The proximity of the two new reservoirs, particularly Rafferty, to Estevan, Weyburn, Regina and residents of North Dakota, will lead to new outdoor recreation use patterns in the region. Additional mid-week, evening and year-round participation will result from this proximity. New cottage demands and year-round residences are anticipated at both reservoirs, especially Rafferty which will be within a few minutes drive of Estevan.

Weyburn and area residents own 166 cottages at White Bear Lake and 41 at Moose Mountain Provincial Park. This is in contrast to Estevan and area residents who own 76 at White Bear Lake and 23 in the Provincial Park. 40 of the 48 cottages and residences on Boundary Reservoir are also owned by Estevan residents.

The population of Estevan has reached and surpassed that of Weyburn only in the past decade. For many years, Weyburn was the larger city with better paved roads leading toward the Moose Mountain Resorts. Estevan has not enjoyed the same level of accessibility to the Moose Mountain area, until quite recently, despite its equivalent distance.

With the potential for boating, fishing and other water-based activities within minutes of Estevan, additional demands for cottage lots near that city can be expected. Many cottage owners from Weyburn, Estevan, Oxbow, Alameda and other communities closer to the new reservoirs may choose to dispose of their cottages at Kenosee and White Bear Lakes in favour of new cottages at Alameda and Rafferty. Visitors to the Rafferty/Alameda 'Open Houses' in March, 1986 confirmed this. Both reservoirs are also likely to prove to be attractive to North Dakota residents. At least 83 resident families of North Dakota have cottages at Kenosee and White Bear Lakes (SPRR, 1986). Both reservoirs will be closer to all Americans for fishing, boating and hunting.

37 cottages at Moose Mountain Provincial Park and White Bear Lake Resort are owned by residents of Manitoba, 35 by Albertans, 18 by British Columbians and 9 by residents of Ontario. It is probable that many of these out of province cottage owners are former Saskatchewan residents.

ACCESSIBILITY OF THE SOURIS RIVER VALLEY

One of the current characteristics of the Souris River Valley west of Estevan is its inaccessibility to the public. Between Highway 18, southwest of Estevan and Primary Grid #705 south of Halbrite, a distance of 58 km, only three roadways with bridges, cross the Souris River. These include the grid road between Macoun and Outram (19 km upstream from Estevan), Primary Grid #606 at Dr. Mainprize Regional Park (25 km further upstream), and the rural farm-access crossing along the north boundary of the Midale Community Pasture. Most of the valley has restricted public access due to the adjacent extensive grazing lands in the three community pastures and private or crown-leased pastures. Public recreational access to the valley is afforded at very few other sites, such as at the Midale Dam (Dead Lake) and at the Lutheran Church Camp, 4 km south of #705.

Good public access to the new Rafferty Reservoir will be provided at a number of locations to facilitate recreational opportunities (Figure 9). Super Grid #705 will be elevated in its present location and control structures will be installed to ensure permanent wetland development to the north, in the extreme upper reaches of the reservoir at Full Supply Level. This area will be improved as a wildlife/waterfowl production area with islands, nesting sites and habitat enhancement. Fish movement will be ensured to retain natural spawning. An interpretive display with nature trails and picnicking facilities will be developed to maximize educational, recreational and tourism opportunities. A second weir approximately 3.2 km south of #705 will be constructed to contain waters in a second, lower pond, south of #705 when the reservoir elevation is two to three meters below Full Supply Level. These wetland developments are described further in the Wildlife Chapter.

Public access will be provided to the east and west sides of the reservoir just south of the Roughbark Creek - Souris Valley confluences. This is in the area of the proposed relocation site for Dr. Mainprize Regional Park. The Souris Valley floor, at an elevation of approximately 543 m, will have 6.5 m of water (21 feet) when the reservoir is at Full Supply Level. All forms of water-based recreation activities are expected to occur in this area after the reservoir reaches this point. (The relocation of Dr. Mainprize Regional Park

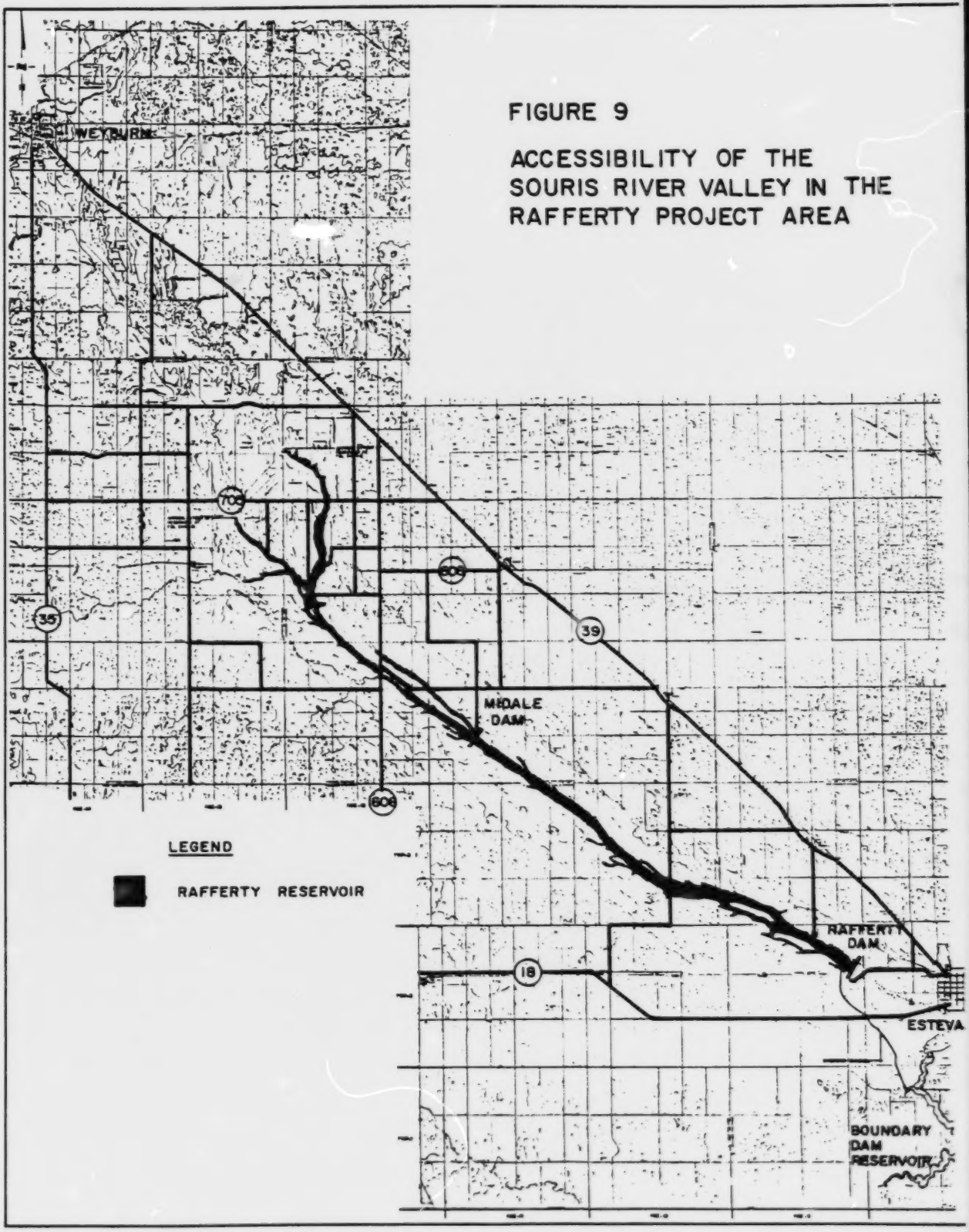

FIGURE 9

ACCESSIBILITY OF THE SOURIS RIVER VALLEY IN THE RAFFERTY PROJECT AREA

is discussed in detail elsewhere in this Environmental Impact Statement.) It should be noted that some lands adjacent to the reservoir will provide opportunities for extensive forms of outdoor recreation (hiking, nature appreciation, hunting, cross-country skiing), particularly within or adjacent to the remaining treed areas. Although these areas have been sparsely used to date, they will take on added value in combination with other recreational opportunities and developments around the reservoir. Future recreational planning activities will consider these areas.

Super Grid #606 will be retained as the major north-south access across Rafferty Reservoir. As the new Mainprize Park will be located in the same general area, #606 will remain as the major recreational access road from points south and west as well as from larger points north and west, such as Weyburn and Regina. Road connections from #606 east to Macoun will also afford public access to the Dead Lake channel. Reservoir access and boat launch sites will be retained at #606, at the Midale Dam Site and on both north and south shores where the Macoun-Outram grid road is inundated. Camping facilities are not proposed at these sites. Picnicking facilities and public washrooms are anticipated requirements.

Whereas the relocated Dr. Mainprize Regional Park will be the prime recreational site at the northwesterly end of Rafferty Reservoir, an easterly park and recreation development is proposed around and upstream from the Dam.

Preplanning the reservoir, including reshaping of gravel extraction pits, location of stone rip-rap harvesting areas, afforestation areas, cottage sites, viewpoints and access roads, is essential to preserve and improve visual qualities and long term recreational/tourism development potential.

LOWER RAFFERTY RECREATION AND TOURISM DEVELOPMENT OPPORTUNITIES

The attractiveness of an area, as well as its potential for development, is largely a matter of what one sees from the main access routes. Since few natural features have as much appeal as water, especially in dryland regions such as southern Saskatchewan, views of the reservoir, as well as public access points along its shores, will be carefully located and designed. Permanent access routes will be located to reach the Rafferty Dam (and park lands)

directly from Highway 39 to the north and Highway 18 to the south. These public roadways will connect across the dam where maximum visibility and enjoyment of the water is afforded. The southern access road is proposed to follow along the eastern side of the flood diversion channel.

As shown in Figure 10, the southern side of the Rafferty Reservoir, within the first 10 km upstream of the dam, is characterized by a series of washed glacial meltwater channels. These channels have been cut into the eroded till plain leaving areas of relatively high relief with steep sides and concentrations of boulders and stones on the surface. McDonald Lake is located in the bottom of one of these larger channels. Elevations generally vary between 537 and 542 m in the bottoms of these channels and between 562 and 565 m on the surrounding boulder-strewn uplands. Virtually all of these upland areas have remained in their natural state, being too stony for cultivation. Extensive cattle grazing has been the most prevalent use since the earlier days of the plains buffalo.

The Rafferty Reservoir at Full Supply Level will inundate the bottoms of these meltwater channels, creating two large (100 ha) islands. The slightly longer, westerly island is north and west of McDonald Lake. The easterly island, south and east of McDonald Lake will be 3 km long and up to 500 m wide. Both islands will be designated primarily for wildlife as preserves as they have been identified as critical wildlife habitat for Sharp-tailed Grouse and white-tailed deer.

South of the islands, the inundated meltwater channels will create sheltered embayments suitable for boating, fishing and canoeing. Because of the relatively steep sides of the channels, deep bottoms and the shelter afforded by the islands, there should be considerably less shoreline erosion and lower turbidity than along the more exposed shores along the main Souris Valley. There will be excellent opportunities for protected mooring of boats and marinas. Cottage development in two or three nodes is proposed in this area along the south shore of Rafferty.

Afforestation associated with park developments will provide improved deer wintering habitat. Two quarter-sections (N1/2 28-T2-R9) designated as Critical Wildlife Habitat under the Act will be enhanced. They can be used for day use and camping. These lands will be included within the park and supplemented by

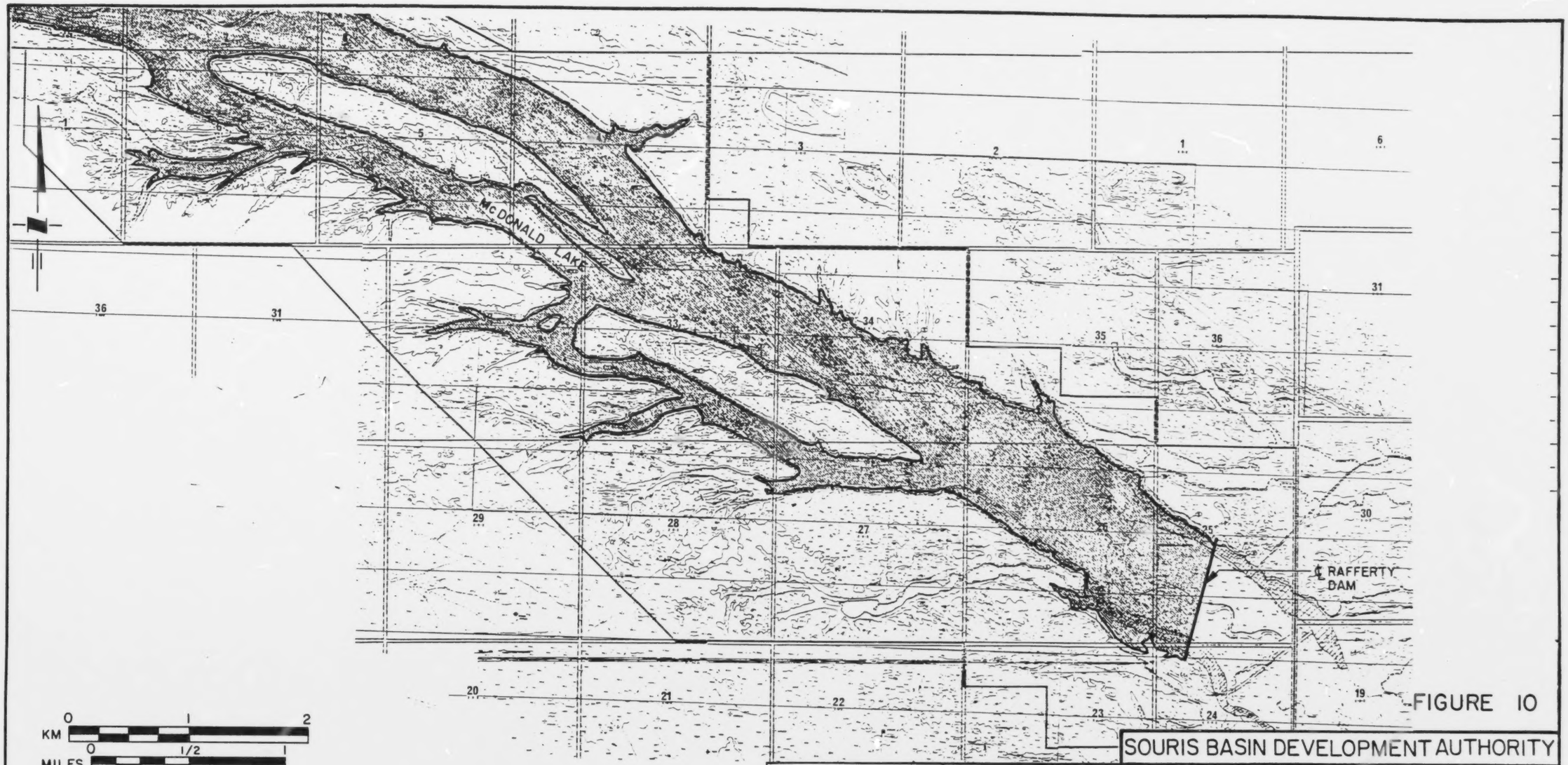

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FIGURE 10

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SOURIS BASIN DEVELOPMENT AUTHORITY

RAFFERTY / ALAMEDA PROJECTS

RAFFERTY DAM
RESERVOIR
ENVIRONMENTAL IMPACT STATEMENT
LOWER RAFFERTY MELTWATER
CHANNELS & ISLANDS

PROP.				UNIT	SYST.		FUNC.			SERIAL			REV
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other land as described in the Wildlife Section of this Environmental Impact Statement.

It is proposed that fish rearing ponds, if required, with suitable interpretive facilities, be located within the park. Various small tributary areas above Full Supply Level will also be investigated as potential fish rearing pond sites.

The park along the south end of Rafferty Reservoir will have to be of sufficient size to meet the anticipated long-term demands. Wildlife habitat enhancement and protection, cottaging, boating, public day use activities (picnicking, sports, swimming, sightseeing, hiking, riding and interpretive trails) all require space and adequate buffers between them.

RAFFERTY RESERVOIR RECREATIONAL DEVELOPMENT PLANNING

The Rafferty Dam will create a very large water body with new potential between Weyburn and Estevan, however it is not likely to meet the usual high public recreation standards unless considerable effort is devoted to planned infrastructure development and facility enhancement.

This reach of the Souris Valley is naturally devoid of the trees on the adjacent uplands which would be required for shade and wind shelter. A suitable long-term afforestation program will be essential in selected future recreational use areas. The water quality of the reservoir is expected to be similar to other prairie lakes. Natural sand beaches will not be common; most of the shoreline will develop in bouldery glacial till resulting in rocky, steep and terraced shorelines. Fluctuations of the reservoir, although likely to remain within one-half to one meter during any summer recreation season, could be considerable during periods of extended drought, such as would have occurred in the 1930's. Normal operations of the reservoir, however, will enable maximum utilization of the water-based recreational potential.

Park development must progress in stages reflecting the uses and demands placed upon the area. While land will be acquired by the Authority in anticipation of long-term development and use, facility development and enhancement of the recreational opportunities will be spread out over at least

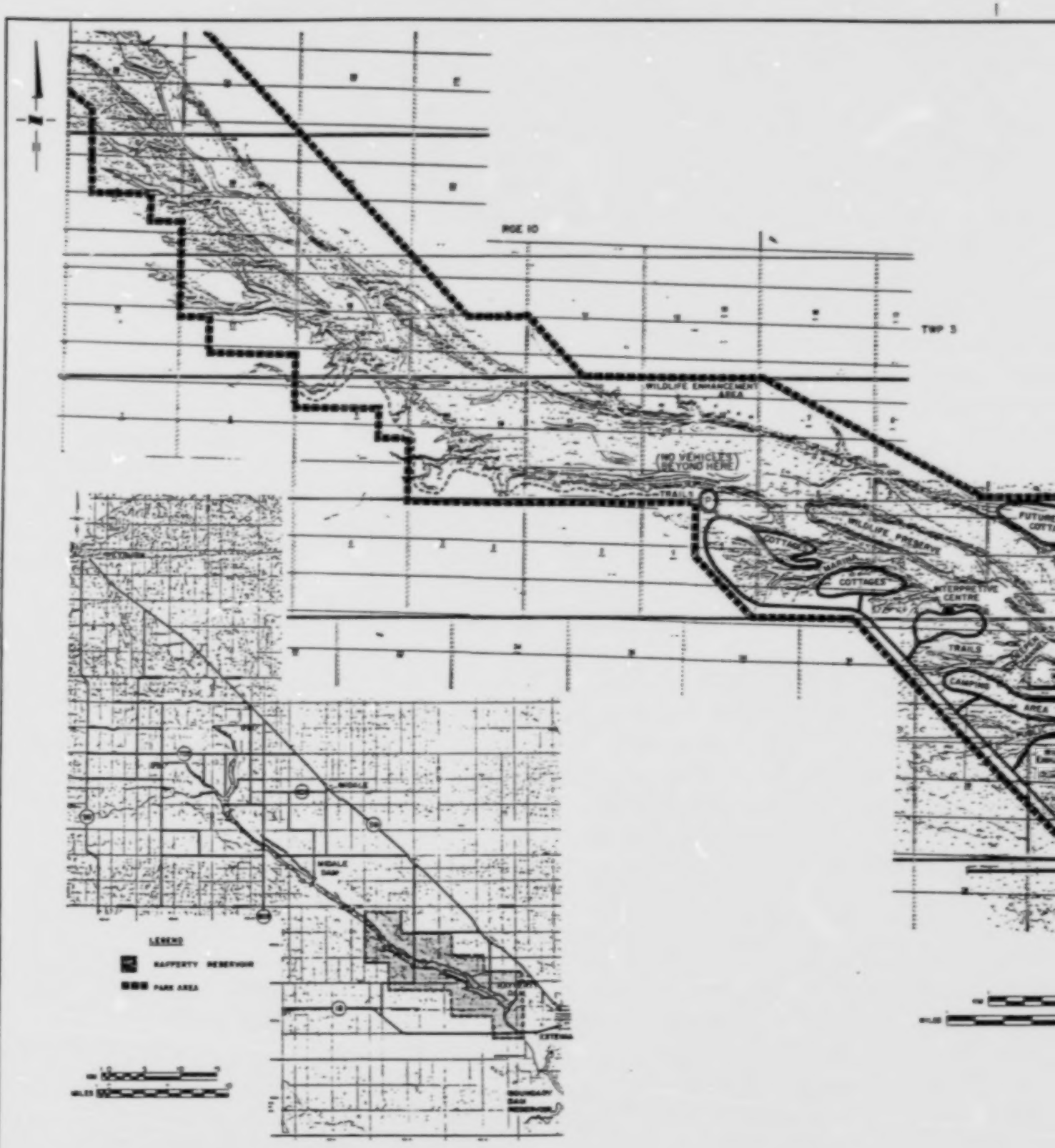
a ten year period after completion of the dam to ensure public satisfaction with development.

Immediate development will include public access roads, parking facilities and construction of a visitor reception center to view the actual construction of the dam. Over 100,000 visitors used the Nipawin viewing site during the dam construction period (Saskatchewan Power Corporation). The viewing center will be located on the south side of the valley approximately 600 m upstream from the toe of the earth-filled dam. It will be relatively isolated from the noise and dust associated with construction activities and visitors will be completely safe. This facility will remain for use within the park following completion of the dam.

Other immediate developments will include beach contouring and placement of sand in the future public beach and day-use areas. Approximately 100,000 m^3 of gravel resources will be removed from one of the meltwater channels for use in the construction of the dam. This area and others will be investigated as potential future beach sites (Figure 11).

The existing CP rail line from Estevan to Outram, Torquay and points west crosses the Souris Valley approximately 1 km downstream from the dam. It presently follows a "reverse S" curve to reach the upland. In its present location, all access to the park from north or south would have to cross this railway track at least once. The existing railway grade would require rip-rap protection at its lower elevations as the reservoir waters, especially during surcharges, would wash against the railway grade. The track would seriously hinder pedestrian and vehicle movements within the park and along the southern shoreline west of the dam.

As shown in Figure 12, it is proposed to relocate approximately 2.5 km of this railway track to provide unimpeded access to and within the park from the north side, across the dam and within the park on the south side. All costs associated with this railway relocation will be project costs borne by the Authority as discussed in the Transportation section of this Environmental Impact Statement .



LOCATION PLAN

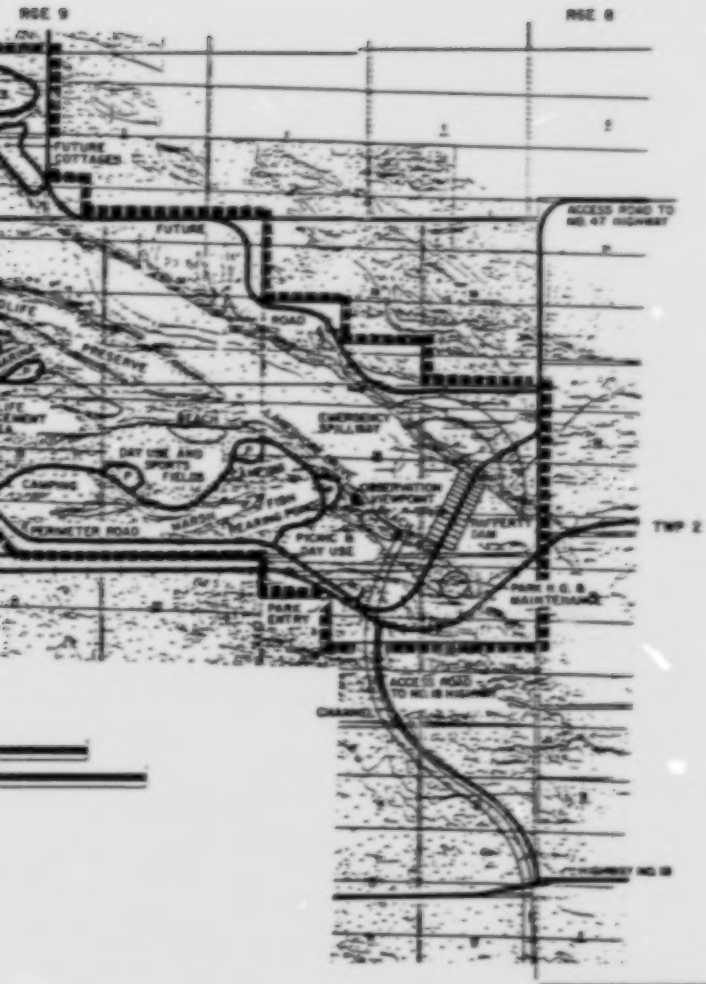


FIGURE 11

SOURIS BASIN DEVELOPMENT AUTHORITY							
RAFFERTY / ALAMEDA PROJECTS							
RAFFERTY DAM RESERVOIR ENVIRONMENTAL IMPACT STATEMENT PROPOSED PARKLANDS LOWER RAFFERTY							
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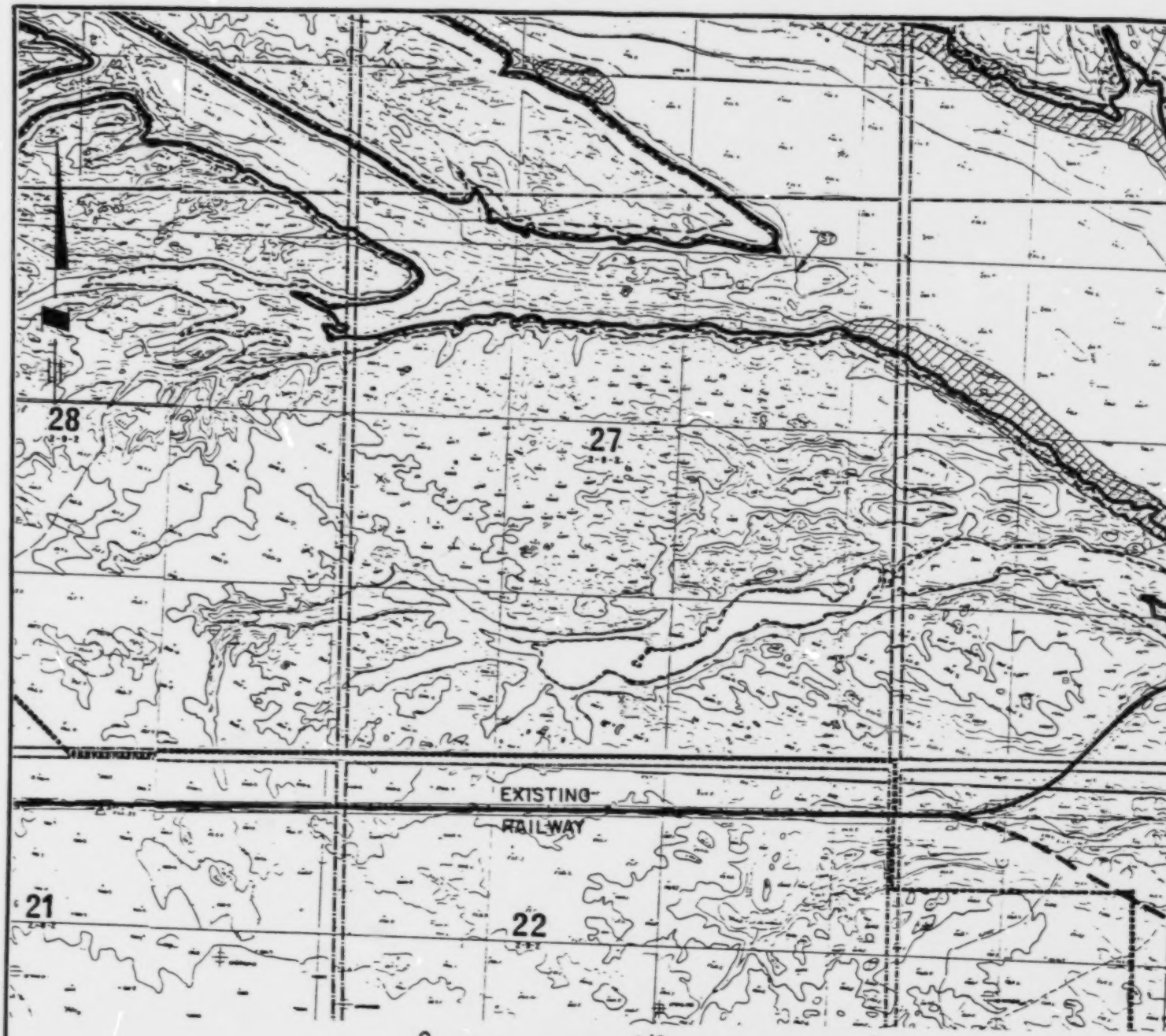

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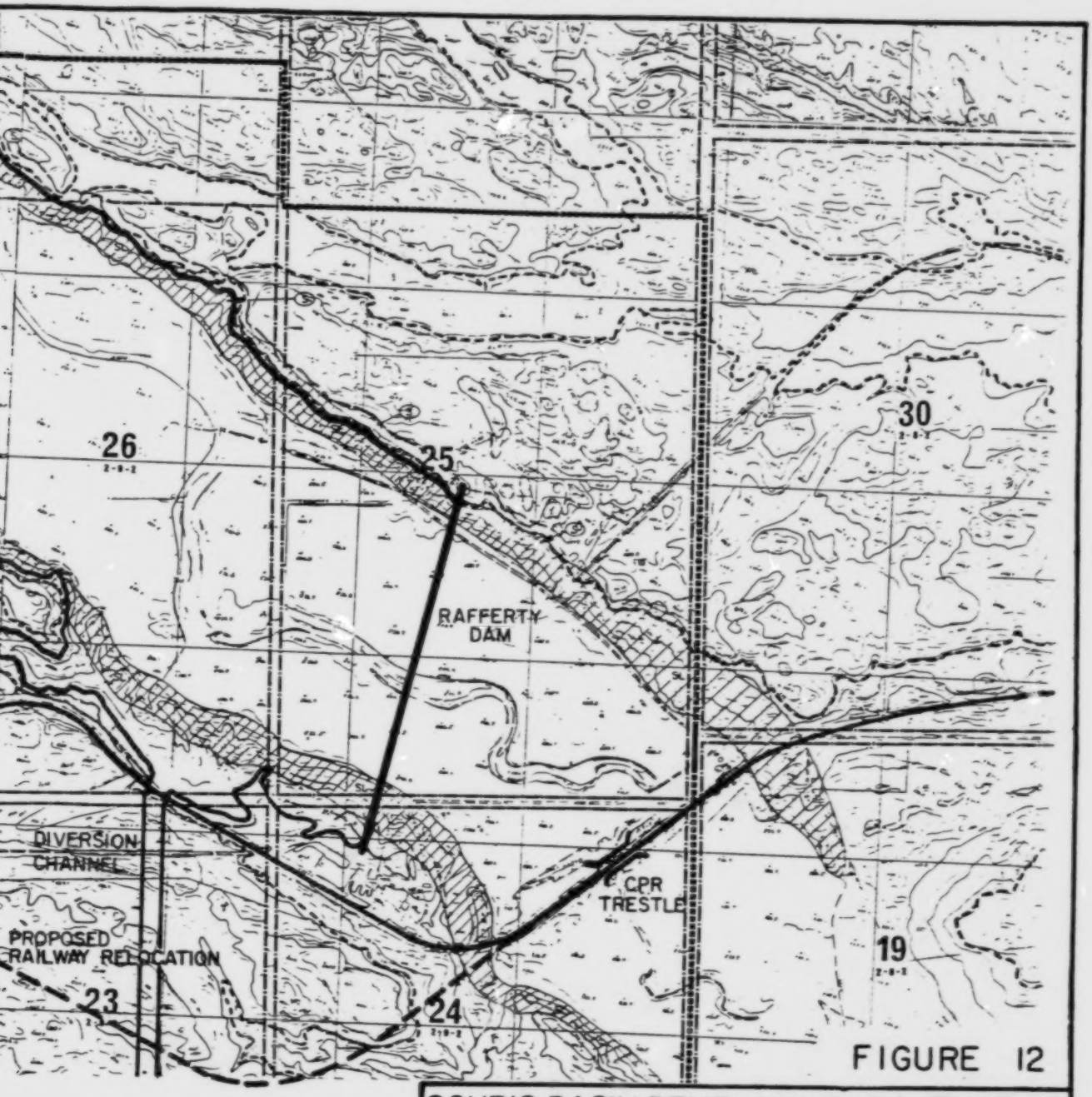

FIGURE 12

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SOURIS BASIN DEVELOPMENT AUTHORITY

RAFFERTY / ALAMEDA PROJECTS

RAFFERTY DAM
RESERVOIR
ENVIRONMENTAL IMPACT STATEMENT
PROPOSED CPR RAILWAY RELOCATION

PROP.	UNIT	SYST.	FUNC.	SERIAL	REV
A435	140		RVR		A

PHOTO ONE: Midale Dam at confluence of Dead Lake channel and Souris River Valley at southeast end of Midale SDA Community Pasture. This small dam created Dead Lake (background) and waterfowl marshes (foreground) and provided water for irrigation downstream (right). Dead Lake receives considerable sport fishing activity in summer as well as ice fishing in winter.

(Photo Courtesy SBDA)

PHOTO TWO: Site of proposed visitor viewpoint to safely observe construction of the Rafferty Dam, 600 metres downstream. South abutment of dam will connect to the valley wall at upper right.

(Photo Courtesy SBDA)

Initial work by the Authority will include preparation of a preliminary Park Master Plan to guide future long-term development and control uses of the park lands. This preliminary Park Master Plan will be incorporated into the overall reservoir management planning process, involving local municipalities and various government departments. Long-term development and management responsibilities will have to be determined for all park lands as well as lands used for other purposes such as wildlife. Ground preparation and tree planting in selected areas, fencing of the park boundaries, establishment of camping and picnicking areas and provision of infrastructure such as potable water supply, power, street lights, telephone, waste disposal and maintenance area will be undertaken. As demands for cottage lots and commercial activities (confectionery, houseboat and boat rentals, marina, etc.) is expected to be immediate, cottage lots will be surveyed and boat launch sites developed.

A perimeter park access road is proposed to follow along the south boundary of the park for approximately 11 km. This road, with adjacent tree plantations, will act as a fireguard to protect extensive pasture lands on the south and west from any internal grass fires.

Secondary access roads will branch off this perimeter road, leading park visitors to isolated day-use, camping, marina, interpretive, cottage and riding/hiking areas. Each such area will be integrated with natural site characteristics, including the surface drainage, viewpoints of the reservoir and optimum building and development sites. The most westerly segment of the park will be left natural with hiking, cross-country skiing and perimeter trail riding the preferred uses. This area is considered critical habitat for white-tailed deer and Sharp-tailed Grouse. Interpretive trails and wildlife viewing may be promoted here.

A second roadway may be required along the northern perimeter of the park some time in the future, as a scenic drive and access road to future cottage areas (Figure 11).

As at Blackstrap Reservoir, southeast of Saskatoon, the park lands may initially be set aside as a Provincial Recreation Site. Saskatchewan Parks, Recreation and Culture could upgrade the area to Provincial Recreation Park status when visitation, use, demands and level of facilities and services

warrant. (Blackstrap Recreation Site, created in the late 1960's became a Provincial Park in 1986.)

Provincial Park status for the Rafferty park lands is more likely to be warranted than the proposed park lands at the Alameda Reservoir. Such a future decision, however, is obviously beyond the scope of this Environmental Impact Statement. A long-term Park Master Plan should address this issue.

While the immediate recreational demands will be water-based, cottage and day-use oriented, much longer term, and broader opportunities exist. From a regional, year-round use and tourism perspective, a number of other excellent resources remain and these can be turned to market advantage in the future.

INTERPRETIVE POTENTIAL

One of the most significant long-term potential developments within the proposed designated park land near the Rafferty Dam will be that of a major Interpretive Center. In November, 1986 the Souris Basin Development Authority sponsored a one-day workshop to explore the potential for such an Interpetive Center in the Project Area. Representatives of the Western Development Museum, Meewasin Valley Authority, Museum of Natural History, Parks Recreation and Culture, Tourism, Small Business and Co-operatives, Saskatchewan Research Council and representatives of the energy industry took part. The consensus was that potential definitely exists for the creation of a major tourist attraction in the area. The resources to be interpreted and developed would focus upon inter-related themes and sub-themes: energy resources; earth sciences; and human heritage.

The energy theme would focus upon the coal, oil and gas resources in southeastern Saskatchewan; their formation, discovery, recovery and uses. Coincidentally, the first of the new high production deep oil wells in the region, is actually in the immediate area readily visible just southwest of the Rafferty Dam. The various coal companies, Saskatchewan Power Corporation, oil and gas companies might contribute significantly. The Western Development Museum explored the possibility of an energy museum in the 1970's. Various groups in Estevan are currently promoting such a museum. With Estevan being the "Energy Capital" of the province, this theme is a natural one capable of

drawing on numerous resources in the Study Area. The history of coal mining, from shafts to open pits, and the history of power production in Saskatchewan are excellent sub-themes. Other nearby community museums can be supported as well.

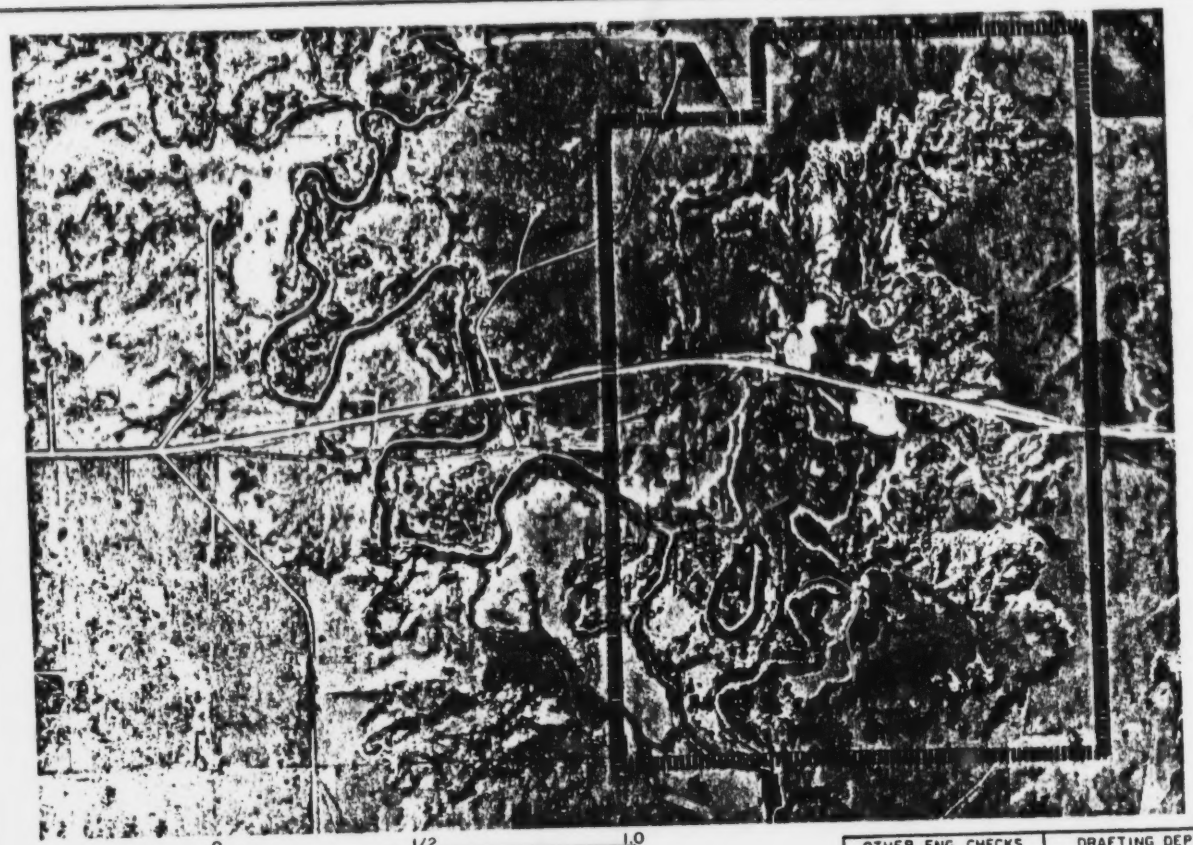
The earth sciences theme, related to the energy theme, could elaborate upon earth history, glaciation, formation of the landscape, soil conservation, water conservation and management, land use and historical settlement, flora and fauna, environmental planning and other aspects of resource management.

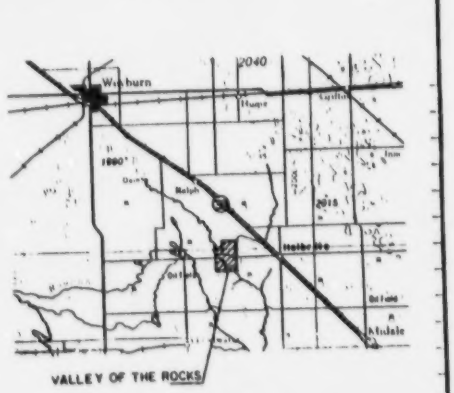
The earth science sub-theme can take advantage of many years of air photo and satellite imagery interpretation associated with oil exploration, surface hydrology, watershed and land resource management. Recent deep oil discoveries west of Estevan were suggested thirty years ago based upon unique surface lineaments visible on aerial photographs (Mollard, 1957, 1984, 1986).

At the November workshop in Regina, a unique area in the Souris Valley 6.5 km west of Halbrite was identified (Figure 13). Referred to as "Valley of the Rocks", this is a 'dumping ground' of large boulders transported from the north by glaciers. It contains boulders sitting on clay pedestals, resembling toad-stools, bedrock thrusted and folded by the glacier, bentonite clays created from volcanic ash (see description in Appendix 1). At Estevan, one encounters Tertiary Rock and, at Weyburn, Cretaceous (Mollard, 1986). Between the two time periods there was a tremendous world-wide extinction of virtually all life including the dinosaurs; there is potential here for a great interpretive story.

In the Estevan area, associated with the coal seams of the Palaeocene Epoche, a number of fossil vertebrates have been found including mammals, lizards, salamanders, fish, turtles, crocodiles and others (J. Storer, 1986, personal communication). There are many excellent fossil specimens suitable for interpretive displays.

In addition to the unique sites and prehistoric features, there are opportunities to interpret glacial events including the formation of the Souris Valley glacial meltwater spillway, topographic features and their significance relative to human settlement and land use. Representative landscapes and characteristic features can be protected and interpreted, both on-site and in a Centre. Erosional features, cliffs, river meanders and oxbows, and other




2040
Winnipeg
Hwy
Dauphin
Ralph
Inglewood
Brandon
Minnedosa
Birtle
Russell
Shoal Lake
Virden
Melita
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Souris
Killarney
Boissevain
Pierson
Waskada
Reston
Carberry
Portage la Prairie
Neepawa
Gladstone
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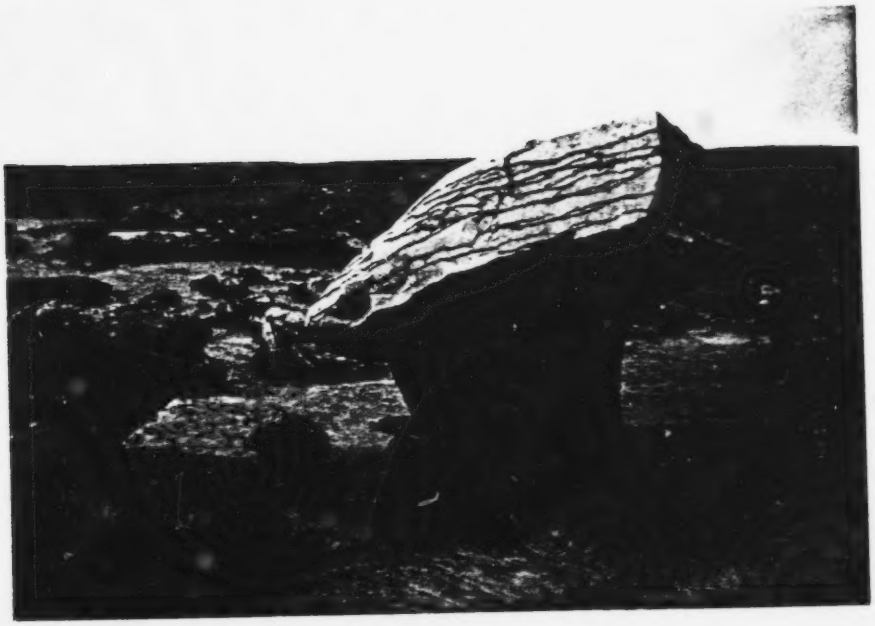


PHOTO THREE: Limestone erratic boulder deposited by glacier into Souris River Valley area west of Halbrite. Boulder sits precariously on pedestal of clay.
(Photo Courtesy SBDA)

PHOTO FOUR: This area is very unique and extremely sensitive, worthy of protection and interpretation. The area requires controlled visitation in order to protect the natural landscape and the visitors. Uncontrolled or indiscriminate climbing or traffic would court disaster.
(Photo Courtesy SBDA)

PHOTO FIVE: "Valley of the Rocks" erosional features 8 km west of Halbrite.
(Photo Courtesy SBDA)

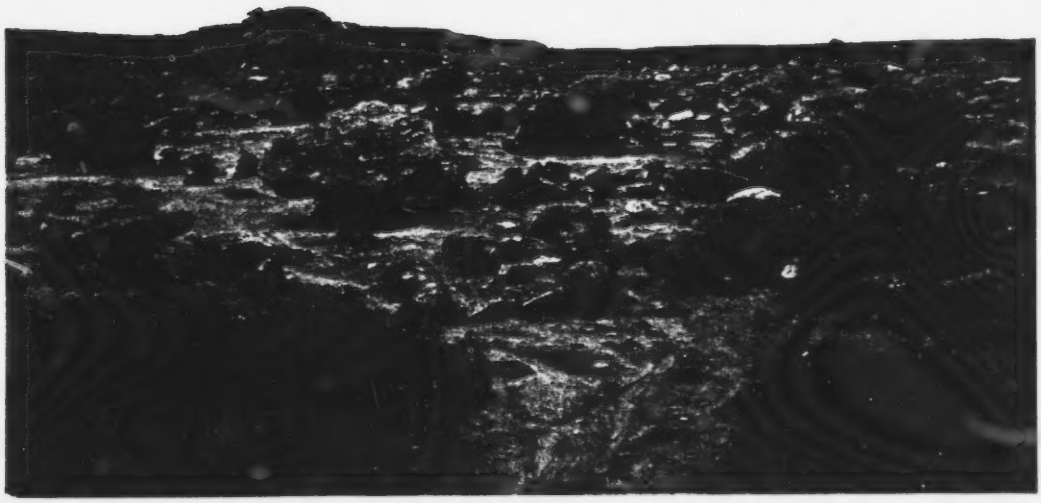


PHOTO SIX: "Valley of the Rocks". Note boulders sitting on pedestals and erosional features.

(Photo Courtesy SBDA)

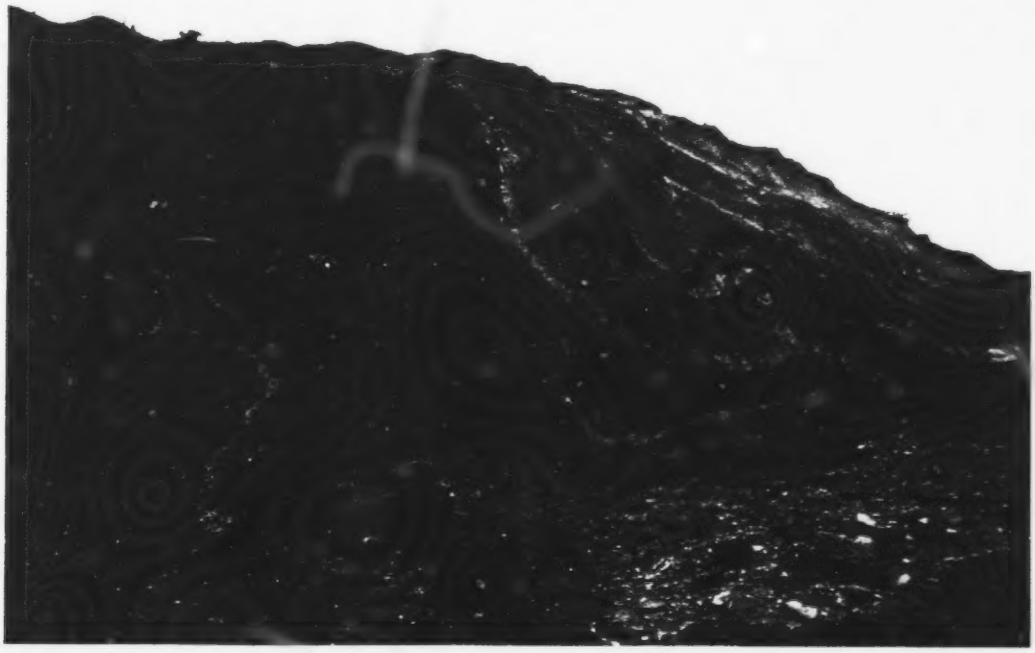


PHOTO SEVEN: Giant "folds" and "Painted Cliffs" at "Valley of the Rocks". West of Halbrite. (Photo Courtesy SBDA)

PHOTO EIGHT: Note weathering and erosion of cliffs in Souris River Valley. West of Halbrite. (Photo Courtesy SBDA)

drainage elements can be interpreted. The opportunities for development are almost unlimited.

The third sub-theme which could be developed fully in an Interpretive Center would draw upon the prehistoric resources of the region, including artifacts for display and interpretation of findings both within the Center and outside. Archaeological investigations associated with this Environmental Impact Statement have identified a number of significant resources. Some sites have scientific and educational value; some have public viewing and interpretive value. A number of sites have potential for all of these. Artifacts have been discovered which are suitable for display to complement the historic resources of the area. At more distant sites, on the ground one may encounter buffalo kill sites, burial mounds, aboriginal settlements and multiple occupation sites, stone cairns and other rock alignments. On the basis of discovered projectile points, there has been at least 7,000 years of continuous occupation. One extensive settlement site in the McDonald Lake area has over 250 stone rings.

The Souris Basin is expected to contain several provincially significant sites and numerous locally significant ones. This expectation is based on the following observations (Saskatchewan Culture and Recreation, 1985). First, the Souris River area was one of the first areas in the province to deglaciate. Human colonization was possible here before most other parts of the province and archaeological sites relating to early settlement should be found. Sites dating from 8,000 to 12,000 years are rare in North America. No intact sites of this age have been discovered in Saskatchewan. Based on limited surface evidence, examples could be discoverable in the Souris Basin.

Second, the Souris River formed a major communications and transportation route from the Middle Missouri River area. Throughout the prehistoric period, Plains people used a distinctive rock type in their technology which was only obtainable from the Knife River drainage of North Dakota. Over the last 1,000 years, other trade items such as pottery moved into Saskatchewan through the Souris system. Archaeological research in the basin would shed much light on this sector of aboriginal economy.

Third, the late prehistoric peoples of the region are known to have participated in ceremonial complexes derived from the Mississippi Valley and,

perhaps, Mexico. Elaborate burials and the construction of burial mounds signify this involvement. Several mound sites occur in the Souris Basin.

Fourth, given its proximity to the farming villages on the Middle Missouri and environmental similarity, evidence of pre-historic agriculture may ultimately be found in the Souris Basin.

Finally, the area contains a high density and diversity of archaeological resources, the majority of which are undisturbed by agriculture. These facts, in and of themselves, argue for the significance of Souris Basin archaeological sites.

Initial archaeological surveys and assessments have been completed and further work is proposed in 1987 and 1988. All of this effort is expected to produce significant results. While the entire Souris Valley region appears to have tremendous long-term tourism and interpretive potential, considerably more research will be required to fully and properly develop that potential. A number of years of research and planning will be required to adequately develop and integrate these major themes and sub-themes and tie them to the resources that exist throughout the Study Area.

Watershed management, of which the Rafferty and Alameda projects form a part, will be an integral part of such long-term interpretive plans. Historical, present and future land uses, human settlement patterns and social and economic activities all directly relate to the Rafferty and Alameda projects. The data gathered during the Souris River Basin Study in the 1970's and the additional information obtained as background information for this Environmental Impact Statement in the 1980's as well as future monitoring and additional data gathering in the 1990's can be used to excellent advantage. Although the Souris Basin Development Authority does not have the mandate or the capital resources to undertake the Interpretive Centre, the Authority will encourage its development and implementation.

The main reason that good interpretive centers and programs are not developed is lack of information. Fortunately, through continued research and investigation prior to the Rafferty/Alameda project proposal, during preparation of this Environmental Impact Statement, and subsequently through monitoring and additional data collection, high quality information is available. Ecological and earth science relationships and baseline information

on flora and fauna are very important elements in any interpretive program. Human history and natural history can be integrated for thematic presentation to visitors of all ages.

The Alberta Government is doing a remarkably good job in developing interpretive centres, maximizing use of unique geological and earth science features. One particularly successful example is at the Frank Slide on Highway #3 in the Crowsnest Pass, offering views of the tragic 1903 rock slide in which part of a mountain slid down and buried a portion of the community of Frank. The development and operation of coal mining in the Crowsnest Pass and the settlement of communities in the region is explained in addition to the details of the tragic event. Tourists are met by costumed interpreters, historic displays, audio-visual presentations, personalized programs and guided tours with viewpoints. Slides, photographs, posters and pamphlets can be obtained. Public washrooms, a refreshment center, picnic sites and gift shops are provided at the Frank Slide Interpretive Center as well.

Physical features of southeastern Saskatchewan in general, and the Souris Valley in particular, are not as spectacular as the Frank Slide or the mountains; they are much more subtle, and as such, require interpretation for the visitor. They are, nonetheless, as interesting to the visitor when properly documented and explained.

An Interpretive Center located within the park - giving a major new focus and tourism thrust to the region would create a new tourism destination area in the province. The Park and Center would receive year-round use and visitation from people from far beyond the immediate Study Area. Earth sciences, settlement patterns, land use and the area economy can be linked to the energy theme, the development of oil and coal. A clustering of things to see and do and a mutual reinforcement of facilities and services will be required over a period of time. Ideas include tours of old underground shaft coal mines, tours of working strip mines to view the huge draglines stripping overburden to expose coal seams, visits to the Boundary Dam and Shand Power Stations and viewing of historic mining artifacts in local museums. Sites, attractions, events and supporting infrastructure must work together throughout the region. The Rafferty and Alameda projects will strengthen this base for further tourism development in the longer term.

LOWER RAFFERTY PUBLIC PARK LAND DEVELOPMENT

The following capital cost estimates and visitation projections do not include a major interpretive/visitor center, as discussed above. In the short term, a modest park visitor center is anticipated which could be expanded or replaced by a more appropriate facility when all development planning and financial arrangements are in place for its creation and long-term operation.

Capital cost estimates are provided for the Lower Rafferty Park lands, anticipating phased development over a period of years. They reflect the initial level of development required to take advantage of the resource potential. A preliminary Park Master Plan will be completed by the Authority in cooperation with Saskatchewan Parks, Recreation and Culture (SPRC). The Authority is committed to two-thirds of these capital enhancement costs. Parks, Recreation and Culture will be expected to draw upon their resources for the remainder of the capital and long-term operations and park maintenance costs. It is further assumed that all park lands will be administered by SPRC.

- Internal access roads (graded/gravelled) 15 km @ $28,000/km	$420,000
- Parking lots	120,000
- Dustproofing of roads/parking	200,000
- Electricity/streetlights/telephone	120,000
- Domestic water supplies/distribution to camping and day use areas	120,000
- Sewage disposal/collection	180,000
- Fence park boundary 40 km @ $2,000/km	80,000
- Perimeter fireguards	50,000
- Storage building	60,000
- Maintenance equipment	100,000
- Irrigation system	180,000
- Tree planting/landscaping	100,000
- Beach contouring, sand, landscaping	60,000
- 2 Marinas and dredging, fishing piers, boat launches	250,000

- Campground development	
60 electrified sites @ $3,000/site	180,000
- Seasonal Motorhome/cabin trailer development	
30 sites @ $7,500/site (serviced)	225,000
- Campground toilet/shower building (modern)	90,000
- Visitor Viewpoint developments	50,000
- Park entry, gate/landscaping	50,000
- Day use/picnicking facilities	50,000
- Beach change facility, flush toilets/showers	140,000
- Sports fields	20,000
- Playground equipment (Camp area, day use area)	50,000
- Trails (walking, bikes)	20,000
- Park Office & Visitor Centre	
(interpretation, displays, offices)	400,000
TOTAL	$3,315,000

Although detailed planning has not been undertaken for either the Lower Rafferty or Alameda park lands, preliminary cost estimates can be provided for the Alameda Reservoir as well. While $3,315,000 is the projected capital requirement for the Lower Rafferty Park area excluding land, the Authority is committed to an expenditure of $2,210,000. $1,650,000 is the projected capital requirement for the Alameda Park, excluding land. The Authority is also committed to two-thirds of this capital expenditure; $1,100,000.

ALAMEDA PUBLIC PARK LAND DEVELOPMENT

- Internal access roads	
4 km @ $28,000	$112,000
- Parking Lots	60,000
- Dustproofing	50,000
- Electricity/streetlights/phone	60,000
- Domestic water supplies/distribution	80,000
- Sewage disposal system(s)	80,000

- Fence Park Boundary		
6 km @ $2,000/km		12,000
- Storage building/maintenance equipment		60,000
- Irrigation system		60,000
- Tree planting/landscaping		60,000
- Beach development		40,000
- Marina, fishing pier/boat launch		90,000
- Campground development		
40 sites @ $3,000/site		120,000
- Motorhome cabin trailer sites		
20 sites @ $7,500/site		150,000
- Campground Service Centre		90,000
- Visitor Viewpoint development		40,000
- Park entry, gate, landscaping		50,000
- Day use/picnicking facilities		50,000
- Change facility, flush toilets		80,000
- Sports field		20,000
- Playgrounds		20,000
- Trails/walks/signage		16,000
- Main Park Building		250,000
	TOTAL	$1,650,000

OTHER RECREATION ENHANCEMENTS

In addition to the major public park developments on the Lower Rafferty and Alameda Reservoirs, public access for boat launching and fishing will be required at other more isolated locations. These sites are anticipated where good access to the reservoirs is possible due to existing grid or farm access roads being inundated. In addition to the boat launches and parking spaces, piers and fish filleting, picnicking and toilet/washroom facilities are proposed. Seven such sites are proposed on the two reservoirs (5 at Rafferty, 2 at Alameda) at an estimated capital cost of $50,000 per site (Total $350,000). The exact location and design of each site will be determined in

consultation with the local municipalities involved. Figure 14 indicates the general location of possible sites.

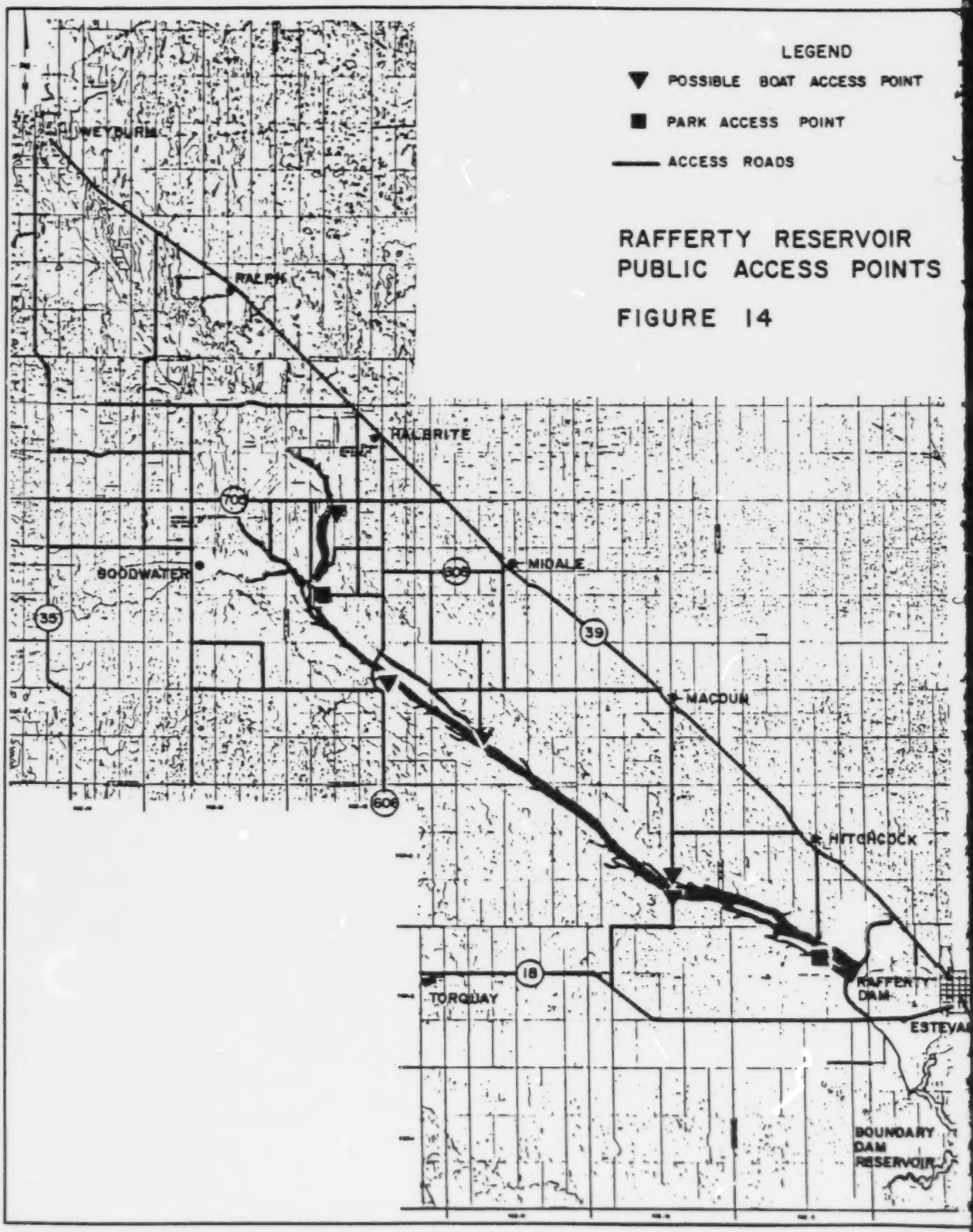
The site at the Super Grid #705 wetlands will encourage public access for canoeing, nature study and appreciation. At this location an observation tower and/or blinds are proposed to facilitate wildlife/waterfowl viewing and photography. Additional interpretive costs associated with a shelter blind, observation tower, interpretive trails and washroom facilities are estimated at $90,000 at this location. No additional lands will need to be purchased.

The "Valley of the Rocks" natural area (sections 23, 24, 25, 26-Township 6, Range 13, W2ndM) 6.5 km west of Halbrite will be acquired, fenced and proposed for Protected Area status. An interpretive display will be erected adjacent to the road. Pedestrian access will be restricted to designated locations. Vehicles, motorcycles and all terrain recreation vehicles will be prohibited. Estimated costs associated with this site for land acquisition, interpretive display, walkways, fencing and public toilets totals $150,000. As this site is extremely fragile and sensitive to vandalism, extreme care and effort will be required to protect the integrity of the various elements. Unless the required care is taken to protect the area through fencing and controlled access and develop its interpretive potential fully, it should not be developed at all. The Authority recognizes its potential as a tourist attraction which can be integrated with other interpretive sites and features elsewhere in the Project Area.

PUBLIC VISITATION

Annual public visitation (excluding private cottage use) at full development in 13 years (approximately ten years after initial inundation at both reservoirs) is conservatively estimated as follows:

1) Lower Rafferty:	110,000 to 130,000 visitor days
2) Dr. Mainprize Regional Park:	70,000 to 90,000 visitor days
3) Alameda:	60,000 to 80,000 visitor days
TOTAL new visitation =	240,000 to 300,000 visitor days.


LEGEND
POSSIBLE BOAT ACCESS POINT
PARK ACCESS POINT
ACCESS ROADS
RAFFERTY RESERVOIR
PUBLIC ACCESS POINTS
FIGURE 14
WEYBURN
RALPH
RALERITE
MIDALE
BOODWATER
MACOUN
HITCHCOCK
TORQUAY
RAFFERTY DAM
BOUNDARY DAM RESERVOIR
35
39
18
705
305
606

These visitation estimates are based upon the anticipated level of park and recreation facility development and normal promotional activities. For comparison purposes, visitation data for a number of other existing Provincial Parks, Regional Parks and Recreation Sites is presented in Table 4. Victoria Day weekend to Labour Day weekend visitation in 1985 and 1986 is included. (Visitor days = vehicle entries times 3.5 persons per vehicle.).

TABLE 4

VISITATION TO SELECTED PARK AND RECREATION AREAS

	1985	1986
Crooked Lake Provincial Park	48,374	42,161
Douglas Provincial Park	75,093	52,546
Blackstrap Provincial Park	50,992	50,407
Boundary Dam Recreation Site	N/A	42,413
Roche Percee Recreation Site	N/A	39,634
Danielson Provincial Park	106,152	103,796
Buffalo Pound Provincial Park	102,172	113,400
Sask Landing Provincial Park	189,532	201,040
Nickle Lake Regional Park	N/A	86,912
Woodlawn Regional Park	N/A	127,880
Thompson Lake Regional Park	N/A	94,549
Pipe Lake Provincial Park	116,518	169,526
Cypress Hills Provincial Park	173,100	212,373
The Battlefords	272,983	231,693
Duck Mountain	283,084	274,494
Moose Mountain Provincial Park	488,600	603,127

(Source: SPRC Statistics and Evaluation, 1987)

It should be noted that projected visitation to the relocated Dr. Mainprize Regional Park and the new Alameda Reservoir Recreation Site is similar to that recently experienced at Crooked Lake, Douglas and Blackstrap Provincial Parks. Visitation at the Lower Rafferty park area is anticipated to

equal or exceed that currently experienced at Danielson and Buffalo Pound Provincial Parks but less than that of the more popular Provincial Parks (Moose Mountain, Cypress Hills, the Battlefords, Duck Mountain).

It should also be noted that visitation to the various park developments is likely to commence immediately, given public access and basic support facilities and services. Boating, water skiing, sailing, picnicking, camping and other activities such as hiking and trail riding will commence long before the reservoirs reach Full Supply Levels or otherwise mature. Recreational activities will also likely increase in winter soon after impoundment. Motor tobogganing, ice fishing, cross-country skiing, hunting and use of cottages will similarly not await maturity of the reservoirs.

COTTAGE DEMANDS

Based upon the proximity of the Rafferty Reservoir to Estevan and the accessibility of the upper reaches to Weyburn and a number of smaller communities, demands for 175 cottage lots are anticipated within the same time frame. 125 of these are proposed in the lower Rafferty area associated with the park land developments there while demands for 50 lots are anticipated adjacent to the relocated Dr. Mainprize Regional Park. It is expected that many of the lower Rafferty cottages will be used year-round or as permanent residences. Those near Dr. Mainprize Regional Park will likely be winterized for potential year-round use, mainly weekends for ice fishing, motor tobogganing and cross country skiing, but permanent residences are not likely.

Cottage lot demand at the Alameda Reservoir is expected to be less than at Rafferty due to the lower nearby population base, but new opportunities for water-based recreation and fishing combined with relocation of cottage sites from Kenosee and White Bear Lakes suggests an initial need for at least 100 cottage lots. As previously stated, a number of families from North Dakota and Manitoba are likely to take advantage of this new opportunity at either reservoir as well.

The Authority has assumed that cottage lots will be developed by a private developer. The property may be leased for a definite period of time or sold. Each option has advantages and disadvantages which will be discussed with area

municipalities subsequent to the decision to proceed with the projects. All cottage development will be undertaken to acceptable minimum standards for buildings as well as for services such as effluent and solid waste disposal. The Authority has not included capital costs in the project budget for year-round servicing of each cottage area. An estimate of $7,500 per cottage lot has been assumed to be the cost to a developer based upon the following: sewage collection ($1,500), sewage disposal ($1,500), water supply and distribution ($2,000), internal streets/drainage with rural cross-section gravel roads ($1,000), power and street lights ($500), other amenities such as landscaping, open space, surveys, planning ($1,000).

Summary Of Estimated Cottage Development Capital Costs (Private Development)

a)	Lower Rafferty	
	125 cottage/residence lots @ $7,500/lot	$937,500
b)	Dr. Mainprize/Upper Rafferty	
	50 cottage lots @ $7,500/lot	375,000
c)	Alameda	
	100 cottage lots @ $7,500/lot	750,000
	TOTAL COST	$2,062,500

Projected Cottage Visitation

Previous studies of cottage use have indicated average annual use at 56.5 days (Saskatchewan Department of Natural Resources 1970) and 60 days (Souris Basin Study Report; Volume 2, Supplement 5, 1978). With most new cottages now being constructed for winter use and with earlier retirement, average annual use of cottages is expected to increase to 72 days by the late 1990's. The proximity of Rafferty Reservoir to Estevan will encourage semi-permanent use for many cottages in the lower reaches. Consequently, average annual use of 95 days/cottage is assumed there.

a)	Lower Rafferty	
	125 cottages @ 95 days @ 4.2 visitors/day	49,875
b)	Dr. Mainprize/Upper Rafferty	
	50 cottages @ 72 days @ 4.2 visitors/day	15,120
c)	Alameda	
	100 cottages @ 72 days @ 4.2 visitors/day	30,240
	TOTAL Cottage Visitor Days	95,235

SUMMARY AND CONCLUSION

The Rafferty Reservoir will be approximately 57 km long and up to 15.1 m deep at Full Supply Level. The Alameda Reservoir will be approximately 24.5 km long and 24 m deep at Full Supply Level. These two new reservoirs will more than double the surface water area in the Study Area creating much needed new water-based recreational opportunities. Despite the fact that conditions are not expected to be ideal and that there is potential for longer term reservoir fluctuations with water quality similar to other prairie lakes and reservoirs, heavy use of both reservoirs is expected. The riverine environment downstream from the dams will experience increased and more stable Souris River flows in summer months.

The public has great expectations for development of recreational facilities. Estevan and Weyburn, and smaller communities and farm families in southeastern Saskatchewan, as well as neighbouring North Dakota, are starved for water-based recreation. Many visitors who attended the spring 1986 Open Houses indicated they had to travel over 100 km to the Qu'Appelle Valley to go fishing and to the overcrowded Moose Mountain Provincial Park for waterskiing, boating and other types of water sports. Some who have cottages at Kenosee and White Bear Lakes indicated a desire to move to the new reservoirs.

The key to maximizing the recreational potential of these reservoirs lies in the development of high quality support services, infrastructure and good accessibility. Integrated land management planning recognizing and protecting fragile backshores, wildlife habitat and populations, unique ecosystems, adjacent landowner privacy and needs of the public must be undertaken

immediately. Adequate space for park land development with adequate use areas, buffers and integrated traffic corridors are required.

Demands for certain lands such as the islands in the Rafferty Reservoir and prime parcels around natural harbours or scenic promontories must be anticipated. Divergent and often conflicting interests will be expressed in lands around the reservoirs, including cattle owners, speculators, wildlife and environmental protectionists, hunters, cottagers, tourist resort and other potential entrepreneurs and weekend or holiday visitors. Decisions will have to be made in conjunction with local governments regarding land and water use restrictions, zoning and building controls, enforcement procedures and management responsibilities.

Following the final identification of appropriate locations for boat launching, marina, camping, picnicking, wildlife viewing, swimming and cottage area sites, detailed plans will have to be prepared. The Authority will oversee the preparation of such plans.

In addition to planning for the needs of the public in terms of access, facilities and services, the Authority will undertake necessary planning for private investment opportunities in the form of outfitting for fishing and hunting, houseboat rentals, resort developments and cottage areas.

In recognition of the anticipated recreational demands, the Authority has budgeted approximately $2.2 million for development of park lands in the lower Rafferty area and $1.1 million for the Alameda Reservoir. An additional $350,000 has been set aside for isolated boat launches, piers, fish filleting, picnicking facilities and public washrooms at seven selected locations on both reservoirs. $90,000 has been budgeted for interpretive, viewing and public facilities at the Primary Grid #705 wetlands and $150,000 for the "Valley of the Rocks" acquisition and interpretive facilities west of Halbrite. These expenditures are in addition to the anticipated $1.52 million capital costs of mitigation and enhancement of the Dr. Mainprize Regional Park near the Souris-Roughbark-Dead Lake channel confluence. (This proposed mitigation is described in detail in a following section of this Environmental Impact Statement.)

The need for 175 cottage lots is anticipated at Rafferty plus 100 more at Alameda. Total infrastructure costs of these cottage areas are expected to be $2,062,500 ($7,500 per lot). All of this expenditure is expected to be by

private developers. Public input will be obtained by the Authority before a decision is made as to whether cottage land should be leased or sold.

The Authority has not attempted to identify all potential park, recreation, tourism or private investment opportunities associated with the Rafferty/Alameda project. It has, however, anticipated the needs for enhancement of the natural characteristics of these new large water bodies for the long term benefit of the public. Public demand and access for fishing, hunting, cottages and a variety of related water and land-based activities has been recognized and balanced with the need to protect and enhance wildlife habitats, breeding and rearing areas, environmentally sensitive areas, public safety factors and other environmentally related resource management objectives. Similarly, the Authority will undertake to encourage a development plan which invites private sector investment and maximizes economic opportunities for residents of southeastern Saskatchewan.

The Authority's present mandate is restricted to the development of the Rafferty and Alameda Dams and Reservoirs. Preparation of this Environmental Impact Statement has involved planning for the mitigation of negative impacts as well as preliminary planning of positive opportunities such as for recreation and tourism. At this point in time, the Authority recognizes the longer-term need to develop Park Master Plans for both reservoir areas. These will be integrated with overall water resource and land use management plans dealing with the required variety of land use and water demands. While the Authority's current responsibility will terminate with the completion of the Projects, some alternative organization will be required to carry on the continuing resource management responsibilities. Local government and provincial government officials will be fully involved in determining the form and function of that body. The Authority is committed to acting as the catalyst in these discussions to ensure that local and provincial multiple use objectives are realized now and in the future.

APPENDIX ONE

VALLEY OF THE ROCKS

A unique geological site in the Souris River valley
between Weyburn and Estevan, Saskatchewan

by J.D. Mollard, Ph.D
Regina, Saskatchewan

For the Souris Basin Tourism and Recreation Workshop
Chelton Inn, Regina, November 13, 1986

Through the years the Souris Valley has witnessed a parade of prehistoric Indians and early settlers, wheat farmers and ranchers, geologists and, in recent times, engineers planning to stash its flows. Each came to view the valley from their own background and perspective, and with their own vision of the land. There had been a time - more than 12,000 years before Columbus discovered America - when this valley was home to a mighty ancestral river. At times its flow exceeded three hundred billion cubic feet a day. And in places the river was more than five miles wide and up to 10 feet deep. Its current tore at the soil, sweeping away layer after layer, leaving in its wake a fossil river bed strewn with boulders. In the centuries since, Souris River flows have been erratic - swelling in flood, returning to a trickle in time of drought.

This is a valley of waterworn platforms and benches strewn with boulders, wind-sculptured cliffs, and duncolored prairie grass. On more than one occasion it was the scene of glaciers that transported and dumped stones picked up more than 300 miles to the north. It is a land of changing scenery ... and of turmoil in times past. For even in this twentieth century, nearby earthquakes, equal in power to 136 tonnes of TNT, have rocked buildings, cracked plaster on walls, and sent people rushing into the streets in disbelief.

For nearly fifteen thousand years torrential rains have washed and etched the sun-bleached faces of rhythmically banded cliffs at Valley of the Rocks. And even now the scorching sun bakes the soil, cracking it into myriad mudcrack patterns, then puffing it up like tiny popcorn balls. It is here that the

forces of sun, rain, and wind have combined to create a rough-hewed moonscape of boulders and jigsaw-ribboned cliffs that demonstrate some of nature's finest artistry.

On a peaceful summer day visitors, old and young alike, can stroll Moonscape Walk, view Devil's Hole, inspect dusty white Rillworked Cliffs, ponder the origin of criss-crossed, rust-stained patterns on Nature's Painted Walls, and marvel at the mighty forces that buckled layers of sand and mud rocks into giant folds - a legacy of restless glaciers of the Ice Age. Tucked unexpectedly beneath the neighboring farmland, Valley of the Rocks Amphitheatre is peopled not with concert goers but by an endless variety of glacial boulders, each with its own particular pedigree and story to tell. In the distance at Toadstool Rocks, boulders perched precariously atop stubby clay pedestals catch the eye. And even farther off one catches glimpses of The Needles and Sentinel Butte.

What forces of nature sired and shaped this fascinating landscape? What stories are hidden in the rocks that delight our eyes - first slanting them downward, then upward across receding slopes and cliffs that touch the sky?

(b) LUTHERAN BIBLE CAMP

INTRODUCTION

The Lutheran Bible Camp adjacent to the Souris River in the Rural Municipality of Cymri #36 will be inundated by the Rafferty Reservoir when it reaches an elevation of approximately 546.5, 3 meters below temporary Full Supply Level. During surcharges of the reservoir to contain spring floods, it could be covered by up to 7 meters of water. The existing camp will have to be relocated.

When Premier Devine announced the Rafferty/Alameda Project, February 12, 1986, he advised that the government would deal fairly and compassionately with all parties affected by the Project and specifically valued long-standing volunteer organizations in the area such as the Lutheran Bible Camp. Premier Devine expressed the wish that the Camp would continue to operate in the area and that the government would make every effort to facilitate moving their operations to a suitable location. Full public consultation would be used prior to, during and after filing of the Environmental Impact Statement.

Initial discussions with the Lutheran Bible Camp representatives indicate that the Church has made no decision regarding future plans in the event that the Rafferty Project proceeds. It is understandable that the Bible Camp will require considerable time to fully evaluate their alternatives prior to making any decisions or commitments.

With the start of construction of the Rafferty Dam proposed for the summer of 1988 and impoundment of water commencing with the spring runoff in 1989, the existing camp can remain undisturbed in its present location until at least 1990 or 1991. The camp is five meters higher than the existing Dr. Mainprize Regional Park, hence inundation is not anticipated until some time later than Mainprize.

BACKGROUND

The Lutheran Bible Camp, owned and operated by Metochos Ministries Lutheran Bible Camp Association (formerly the Regina Conference Lutheran Bible Camp Association), serves a large area in southeastern Saskatchewan, roughly bounded by Highway #1 from the Manitoba border to west of Moose Jaw and south to the United States border. Thirty-five congregations are served by the Lutheran Bible Camp with the camping program serving families and from the very young to senior citizens. When not in use by the Church, the camp is used by other organizations such as the 4-H, Cubs, Scouts, Guides and Brownies.

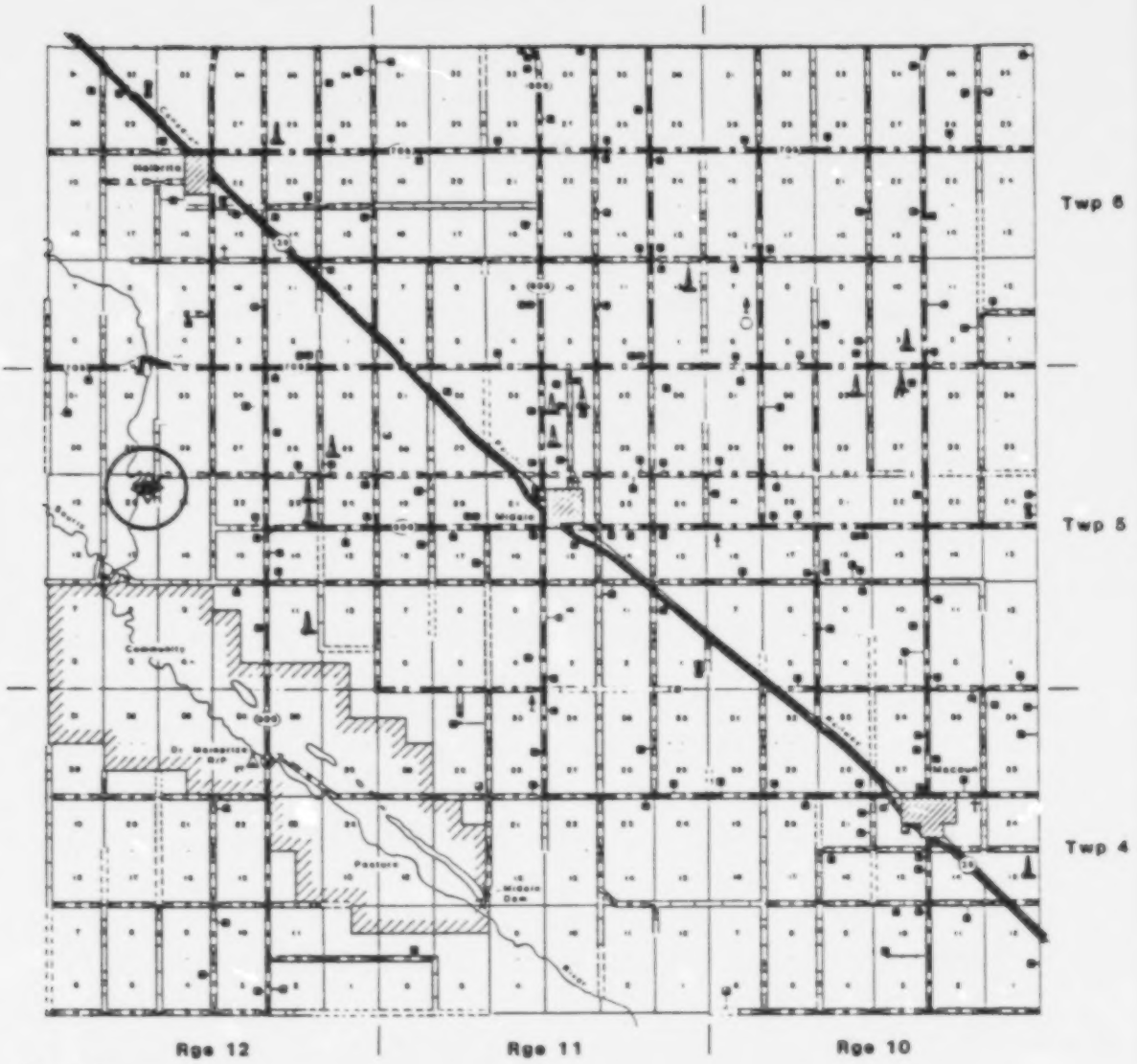
The 3.4 ha Camp is located in a portion of the NE 1/4 20-5-12-W2nd along the Souris River. It is reached by rural roads approximately 12 km south of Halbrite or 13.5 km west of Midale off #39 highway (Figure 1).

The development of a summer camp was started some forty years ago through a lease arrangement with one member of the Lutheran Congregation who owned the property. By the 1970's investment in the development had reached the point that more formal title arrangements were made. The improvements on the property have been occasionally subjected to short term spring floods, as in 1969, 1974, 1976 and 1979, but this hazard has not severely hampered use of the Camp. The greatest physical asset of the existing Camp is the wooded valley adjacent to the Souris River. This natural setting provides shade and shelter and was likely a prime factor leading to the selection of the site initially.

EXISTING FACILITIES AND USE

Improvements to the property include a chapel, dining hall, various dormitories, washroom and toilet buildings, staff quarters, storage sheds and a conference hall. The most valuable asset is the swimming pool and associated facilities (change building, filter equipment, heaters, fence, deck, etc.). Additional assets include basic services and infrastructure such as access roads, power and water supplies.

In 1986, the Camp was occupied almost continuously from the third week of May to the third week of September. Twenty different groups were accommodated, some for a day or a weekend, but most for a full week. A staff of eleven was



Legend

Municipal Road System

LUTHERAN BIBLE CAMP LOCATION

FIGURE 1

LUTHERAN BIBLE CAMP LOCATION IN RURAL MUNICIPALITY OF CYMRI W. of 2nd

used for the regular camping programs between June 29 and August 7th. 1,096 different campers were accommodated with the largest one day gathering exceeding 100. A total of 4,007 person-days were handled by the Camp in the summer of 1986, excluding staff.

MITIGATION

If the Rafferty Project proceeds and the Lutheran Bible Camp Association chooses to relocate their camp to a site other than in the Souris River Valley, appropriate compensation for the flooding of the existing campsite will be paid by the Souris Basin Development Authority.

Should the Bible Camp Association decides to re-establish a camp in the Souris Valley or along the Rafferty Reservoir, compensation for the flooding of the existing camp may be made in the form of money, alternative land, tree planting, infrastructure support or a combination thereof. The Authority has offered to provide technical advisory and site planning services to the Camp Association without cost should a site along the Rafferty Reservoir be selected.

The Authority has undertaken a preliminary field reconnaissance of a number of potential sites with representatives of the Bible Camp Association. Additional potential sites may be investigated in the future to assist the Association in making its decision.

One of the potential advantages of re-establishing the camp is the opportunity to upgrade the facilities, expand upon the program offerings and extend the seasonal use of the camp to perhaps year-round operation. This opportunity results regardless of whether the camp is relocated adjacent to Rafferty or elsewhere in southeastern Saskatchewan.

The Authority has advised the Bible Camp representatives of future long-term plans for recreational, tourism, wildlife enhancement and educational developments associated with the Rafferty Reservoir and of the resulting benefits. In addition to the current camp offerings and programs there would be opportunities to take advantage of new and improved facilities at the relocated Dr. Mainprize Regional Park as well as the various water-based recreation activities (sailing, canoeing, fishing). Wildlife viewing, nature

interpretation, hiking and exploring can be popular future camp activities as well.

The Authority has attempted not to "sell" the project to the Bible Camp representatives, fully recognizing that the preferred option of the Camp owners and visitors may be to leave the camp exactly as it is and where it is. The Authority has indicated its willingness to make every effort to arrive at a suitable negotiated settlement. As it will likely be some time before inundation occurs, there will be no immediate pressure put upon the Bible Camp Association to reach a decision.

The Souris Basin Development Authority is committed to full and fair compensation to the Metochos Ministries Lutheran Bible Camp Association for the loss of its property due to the creation of the Rafferty Reservoir when it occurs. The decision as to the form and amount of compensation will be negotiated with the Association following all necessary approvals to proceed with the Rafferty Project. In order not to influence these negotiations, no provision has been made by the Authority to attach a financial value to the Camp in this Environmental Impact Statement.

(c) DR. MAINPRIZE REGIONAL PARK

INTRODUCTION

Dr. Mainprize Regional Park, approximately 15 kilometers southwest of Midale, will be inundated by the Rafferty Reservoir when it reaches an elevation of approximately 541.5 m. The Souris River floodplain within the Regional Park varies from 541.3 meters at the ball diamond and picnic grounds to 541.8 meters at the golf course. The majority of the park is below 541.5 m, however some facilities and structures are at higher elevations on the north bank of the valley. The lagoon swimming pool is located between elevations 547 m and 548 m and the change house is at an approximate elevation of 549 m. The tipi and animal structures on the knoll west of the pool are at the 550 m elevation. At the Initial Operating Level of 549.5 m the golf course and ball diamonds will be under 8 meters of water. At the maximum flood level of 554.0 m even the changehouse and animal structures would be under 4.0 meters to 5.0 meters of water.

The existing Dr. Mainprize Regional Park will therefore have to be relocated to an alternative suitable site where accessibility and similar facilities can be provided. The Regional Park Board, following consultation with the Authority, has decided that should the Rafferty Project proceed, it wishes to relocate the park rather than close it down or seek monetary compensation. There is great sentimental attachment to the park, particularly amongst older residents who were involved with its creation and worked closely with Dr. Mainprize. The idea of the park and the dedication of those who helped build it goes far beyond its value as a recreational site. This feeling is related to the personal and financial contributions of Dr. Mainprize, his family and friends, and to the innovation, vision and dedication to the spirit of the surrounding community.

BACKGROUND

Dr. Mainprize Regional Park within portions of sections 27 and 34, Township 4, Range 12, West of the 2nd Meridian, approximately 8 kilometers west and 6.4 kilometers south of Midale along Super Grid #606, was established by Order-in-Council, March 21, 1961 as one of Saskatchewan's first Regional Parks. The Park had its beginnings in 1957 when the Rural Municipalities of Cambria and Cymri, conscious of the need for improved recreational facilities in the area, created a committee to fill that need. The site, adjacent to the "Elswick Bridge" which crossed the Souris River, was leased from the provincial government and first developed in 1958 and 1959. The Park was dedicated to honour Dr. William Graham Mainprize with the unveiling of a stone cairn inside the south gate on July 8, 1959. The brochure prepared for that occasion stated that "the communities in this particular corner of the province are far removed from lakes and summer resorts and the need for a recreational spot, more centrally located, has been felt for some time".

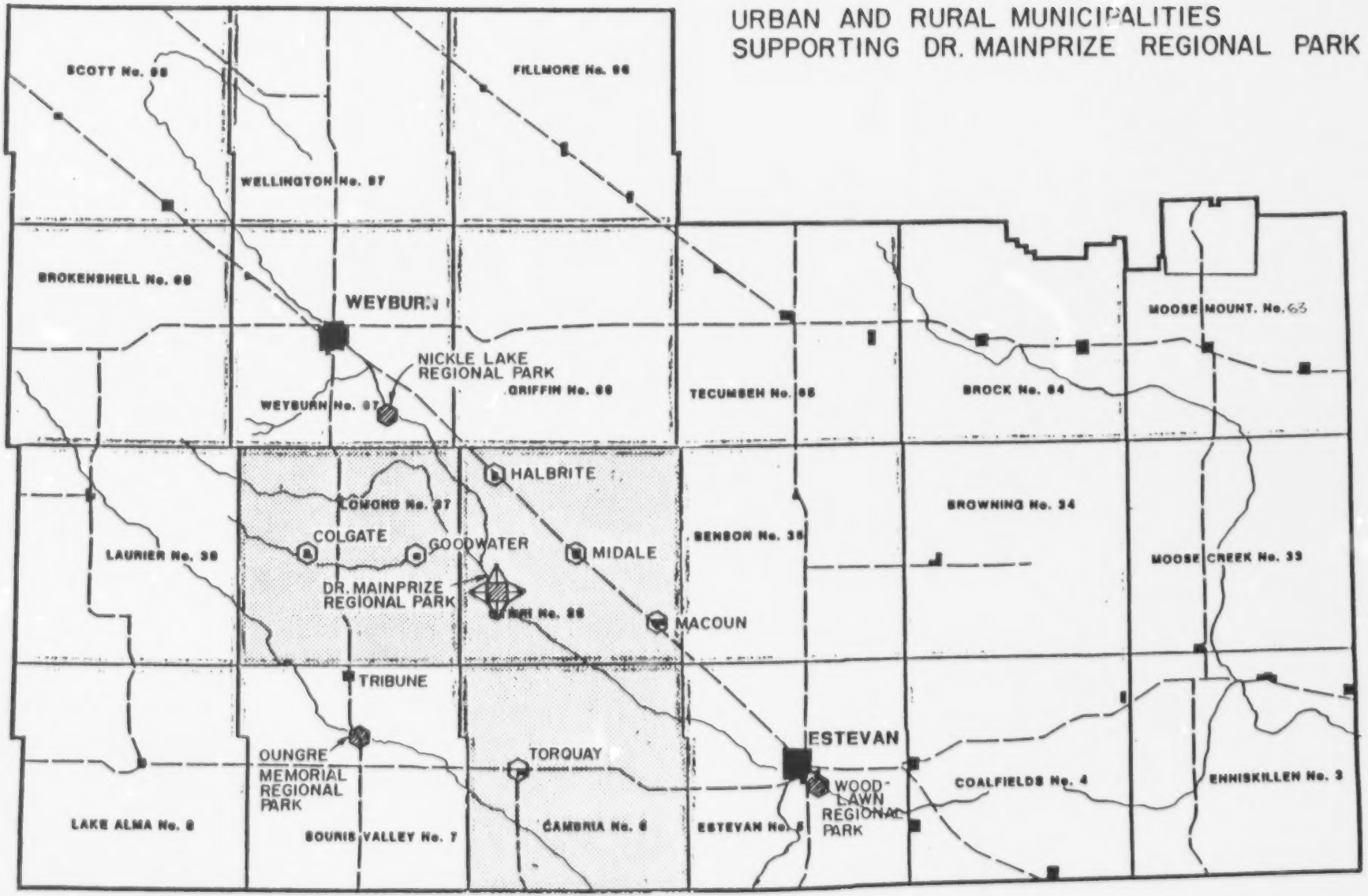
Dr. Mainprize had set up a medical practice in Midale in 1911 and, at the time of the dedication, had served a large area in southeastern Saskatchewan with great distinction for 48 years. The site for the park was ideal in that it was central to the large area served by Dr. Mainprize.

The early development of the park was characterized by the active involvement of numerous volunteers and the personal dedication and contributions of Dr. Mainprize who created a number of unique and picturesque structures. These structures included the three different entrance gates, a miniature Chapel, an Indian Village, Castle, Dutch Mill and a Lighthouse. Swinging bridges connected the tree plantations in the camping, picnicking and playground areas to the 9 hole golf course on the other side of the Souris River. The facilities at Dr. Mainprize Park are depicted in the photographs attached.

The Regional Park, now 48.6 ha (120 acres), is sponsored by eight municipalities: the Rural Municipalities of Cymri #36, Cambria #6, and Lomond #37 as well as the Town of Midale and the Villages of Halbrite, Goodwater, Macoun and Torquay (Figure 1). (By invitation of the Rural Municipality of Lomond, the Village of Colgate also has a representative on the Park Board.)

FIGURE I

URBAN AND RURAL MUNICIPALITIES
SUPPORTING DR. MAINPRIZE REGIONAL PARK



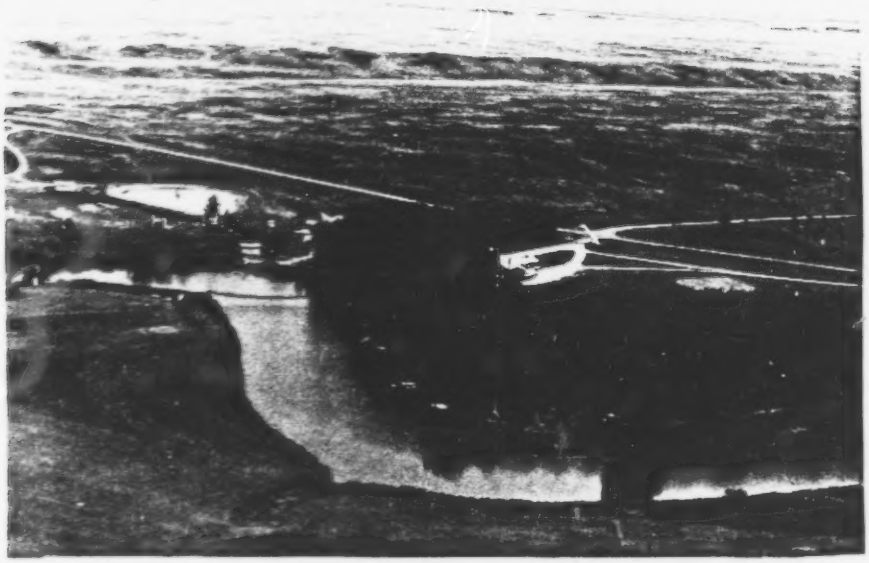


PHOTO ONE: Aerial photograph of Dr. Mainprize Regional Park looking northeast. The golf course is in the foreground with the Park headquarters, the ball diamond, the playgrounds and the lagoon swimming pool on the opposite side of the River.

(Photo Courtesy SBDA)

PHOTO TWO: View of Dr. Mainprize Regional Park taken from Super Grid #606. The two main entrance gates to the Park can be seen at the bottom of the hill on the right. Tall poplar trees are reaching their life expectancy.

(Photo Courtesy SBDA)

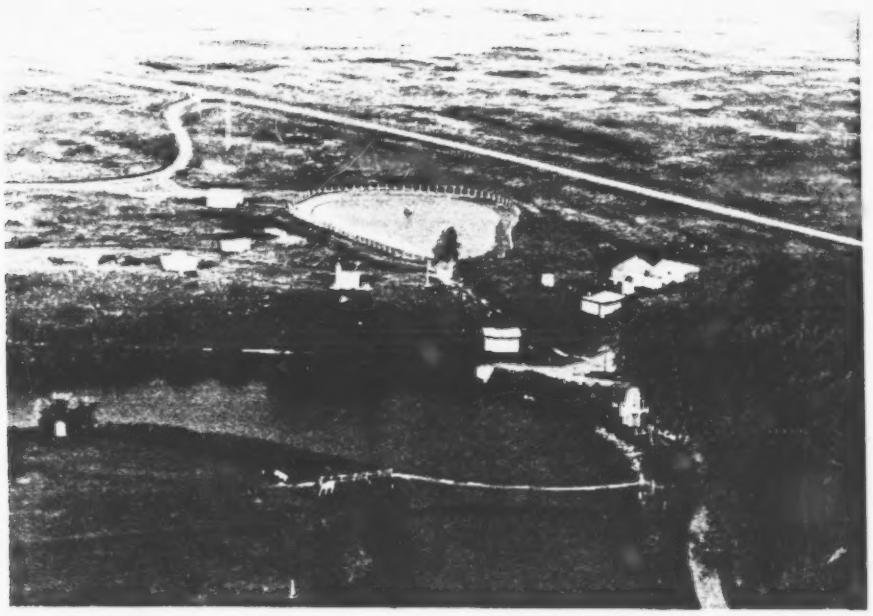


PHOTO THREE: Aerial view of the Dr. Mainprize Regional Park with the swinging bridge, in the foreground, to the 9 hole sandgreen golf course.
(Photo Courtesy SBDA)

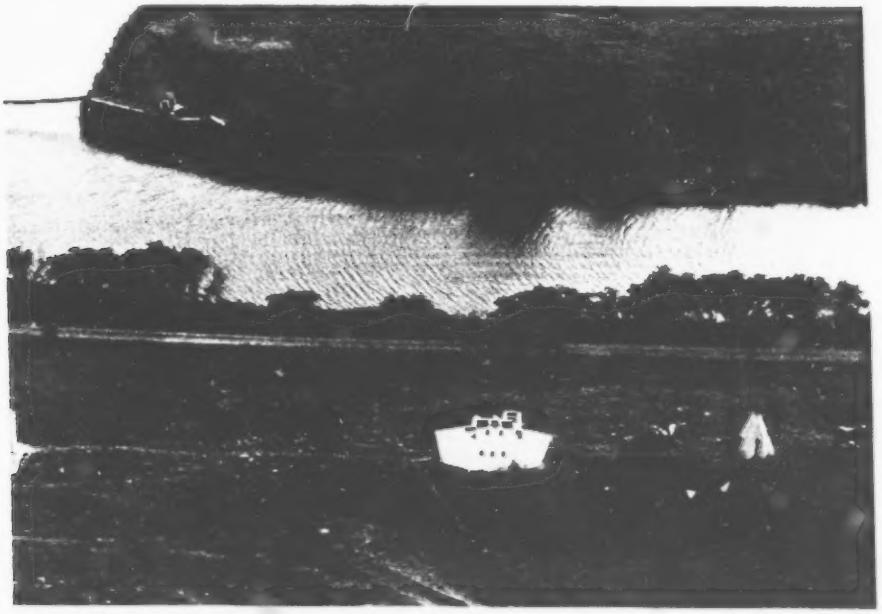


PHOTO FOUR: Aerial view of Statues and Structures of Dr. Mainprize Regional Park in foreground with the golf course on opposite side of the Souris River.
(Photo Courtesy SBDA)

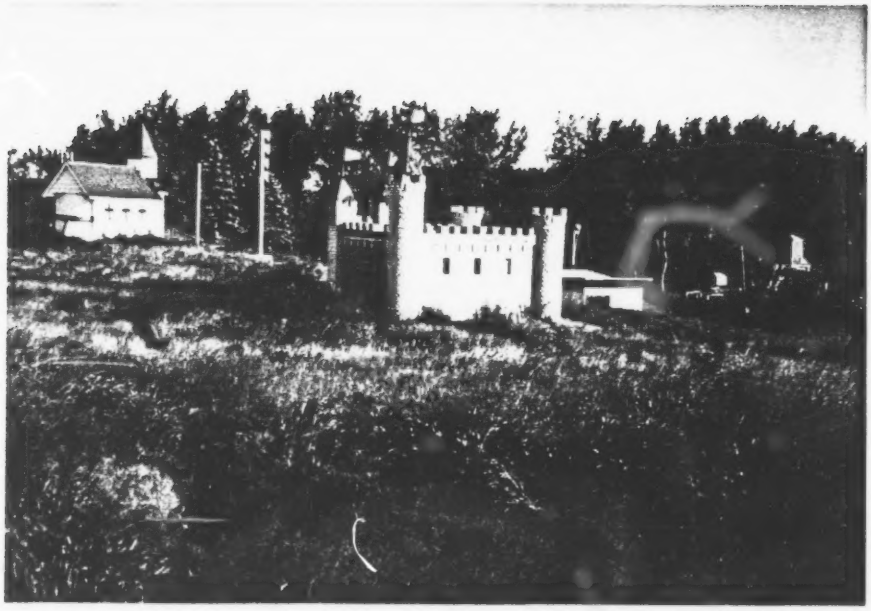


PHOTO FIVE: Ground level view of castle and miniature chapel. Covered wagon and windmill are shown in distance at far right.
(Photo Courtesy SBDA)

PHOTO SIX: Ground level view of Statues and Structures.
(Photo Courtesy SBDA)

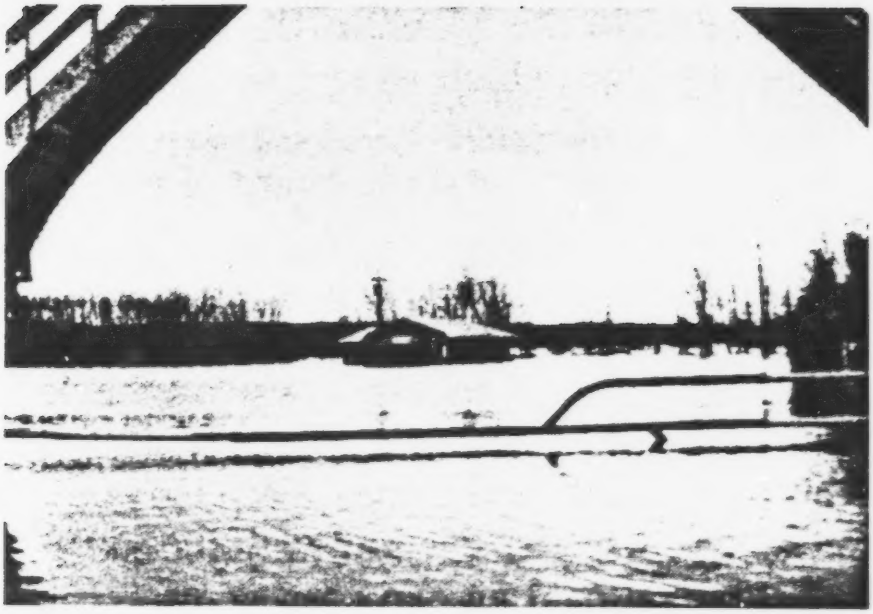


PHOTO SEVEN: Ground level view of flooding at Dr. Mainprize Park (year unknown). Note Jacob's Ladder park gate in foreground.
(Photo Courtesy R.M. Cymri #6 C1980
"From Plowshares to Pumpjacks")

PHOTO EIGHT: Ground level view of over-mature trees surrounding the picnic area at Dr. Mainprize Regional Park.
(Photo Courtesy SBDA)

PHOTO NINE: Dr. William Graham Mainprize. (Photo Courtesy Weyburn Review July 17, 1958)

PHOTO TEN: The Model A Ford "Mudmobile" built by Dr. Mainprize, with tractor tires to traverse wet terrain in order to make housecalls. The "Mainprize Mudmobile" is now on display in Midale.

(Photo Courtesy Brochure for dedication of Dr. Mainprize Community Park, July 8, 1959)

When Dr. Mainprize Regional Park was established in 1961 the surrounding parks at Nickle Lake, Oungre Memorial and Woodlawn had not yet been established as Regional Parks. (These three were established April 1, 1962, 1963 and 1964, respectively.)

With the establishment of these other regional parks, the support population of Dr. Mainprize Regional Park was considerably reduced. In 1961, when Dr. Mainprize Regional Park was established, the eight participating municipalities had a combined population of 3,995 (See Table 1). Today, with the Rural Municipality of Lomond population split three ways (supporting Nickle Lake and Oungre Memorial as well), one could argue that on a straight proportional basis, only one-third of 475 or 158 can be considered as direct supporters of Dr. Mainprize Regional Park. Similarly, with the Rural Municipality of Cambria also supporting Woodlawn Regional Park, only one-half of the current population of 424 should be considered as direct supporters of Dr. Mainprize Regional Park. This effectively reduces the 1986 direct support population of Dr. Mainprize Regional Park to 2,154 rather than 2,683. This is a 46.0% reduction from the original support population of 3,995 in 1961.

TABLE 1

POPULATION TRENDS: 1956 - 1981
8 MUNICIPALITIES SUPPORTING DR. MAINPRIZE REGIONAL PARK*

Municipalities	1956	1961	1966	1971	1976	1981	1986
R.M. of Cambria #6	886	708	661	571	482	456	424
R.M. Cymri #36	817	943	887	843	696	601	570
R.M. Lomond #37	831	777	649	599	521	493	475
Town of Midale	703	645	762	647	572	564	543
Village of Macoun	191	193	175	172	163	190	177
Village of Halbrite	214	180	142	166	132	125	132
Village of Goodwater	76	87	101	71	61	53	42
Village of Torquay	526	462	443	377	344	311	320
Totals	4,244	3,995	3,820	3,446	2,971	2,793	2,683

*Note: This table excludes the Village of Colgate, which had a population of 101 in 1961 and 43 in 1986.
Therefore, the population of the 8 supporting municipalities declined by 1,312 from 3,995 (1961) to 2,683 (1986) or 32.8%.

The three Rural Municipalities lost 39.5% of their population over this 25 year period, and the five urban communities lost 22.5% of their population. Midale and the surrounding Rural Municipality (Cymri #36) and the two Villages of Halbrite and Macoun comprise over half of the remaining population, which supports Dr. Mainprize Regional Park (1,422 of 2,683, or 53.0%). If one deletes two-thirds of the Rural Municipality of Lomond population and half of the Rural Municipality of Cambria population due to their support of other regional parks, this percentage increases to 66.0% (1,422 of 2,154).

While the population in the region has been declining in numbers, it has also been aging, particularly in communities like Midale. In 1981, for example, less than five percent of the total population of the three Rural Municipalities supporting Dr. Mainprize Regional Park was 65 years of age or more. In Midale, the percentage was 22.2. This clearly shows that the rural and urban communities may have significantly different interests and recreational needs. Whereas the park satisfied picnicking, camping, golf, swimming and sports facility needs in the past three decades, the relocated park may require a broader range of facilities and services, particularly including those for senior citizens.

It should be noted that when the park was first established, annual visitation was 50,000 to 60,000. In the last decade, visitation has declined by approximately half.

PROVINCIAL AND MUNICIPAL CONTRIBUTIONS

There have been seven cost sharing Agreements between Mainprize Park and the Provincial Government. Although five year agreements were made, many were renegotiated after only three years. Until the 5th agreement, capital and operating costs were shared, 60%/40% between the province and Park Authority, respectively. This ratio was subsequently changed to 66.67% and 33.33%. Table 2 summarizes the capital costs shared at Dr. Mainprize Regional Park since 1961. (The value of maintenance grants is not included.)

TABLE 2

CAPITAL CONTRIBUTIONS

AGREEMENT	Years	Provincial Share	Municipal Share	Total
1st	1961-66	$12,000	$ 8,000	$20,000
2nd	1965-70	18,000	12,000	30,000
3rd	1968-73	24,000	16,000	40,000
4th	1971-76	24,000	16,000	40,000
5th	1976-81	16,825	10,665	27,490
6th	1981-84	12,800	6,400	19,200
7th*	1985-88	10,933	5,467	16,400
TOTALS	1961-88	$118,558	$74,532	$193,090

*Note - The current agreement will expire March 31, 1988. One-third of the $16,400 is to be spent each of the three years.

By the end of the current three year Agreement, the province will have contributed $118,558 and the eight participating municipalities $74,532, for a total of $193,090. (This does not include donated equipment or the hundreds of hours of labour contributed by the municipalities and their residents.)

In the 1968 to 1976 period, the eight municipalities contributed $32,000; an average of $4,000 per year, respectively. The current agreement calls for a municipal contribution of $1,822.33 per year, less than half of their contribution twelve to twenty years ago. This may indicate either an inability or unwillingness of the participating municipalities to contribute sufficient funds for the capital improvement or upgrading of the existing Park.

The 1983 and 1984 inventories and more recent appraisals indicated a number of assets to be in fair to poor condition. Many of the Dr. Mainprize structures are in need of repair and maintenance.

CURRENT PARK ASSETS

According to Saskatchewan Parks and Renewable Resources records, the 1983 Asset Value of Dr. Mainprize Regional Park was $408,354.00, excluding the provincial crown land.

This valuation comprised:

- Camp and picnic area	$183,000
- Swimming pool	53,000
- Maintenance buildings and equipment	122,000
- 9 hole golf course	29,000
- Playground and sports equipment	6,100
- Dr. Mainprize structures	15,000

According to Saskatchewan Parks and Renewable Resources, the estimated replacement value of Dr. Mainprize Regional Park was $1,350,000.

In 1986, the Souris Basin Development Authority commissioned two independent appraisals of the current Dr. Mainprize Regional Park assets. These valuations ranged from $580,000 to $736,000 excluding land. The major variation was in the value of the trees which one appraiser valued at $94,000 and the second at $303,000. Many of the poplar trees planted thirty years ago have passed peak maturity and will be subject to disease, insects and wind damage in the years ahead as their health and vitality diminishes.

The existing asphalt lagoon swimming pool is also reaching the end of its normal life expectancy. Public Health does not approve the construction of such pools anymore and there have been a number of problems associated with leakage and repair attempts. The pool does not receive a great deal of use because of its condition and style.

One of the important and most utilized assets of the park is the nine hole sandgreen golf course. Despite problems with occasional spring flooding, the grass fairways are usually lush. The two suspension bridges on the course across the Souris River are a unique feature on the relatively short (2,432 yard) par 33 course. The 404 yard par 4 sixth hole is the longest while five of the holes are 268 yards or less. The low green fees and annual membership fees are attractive to golfers from Estevan and Weyburn as well as to local community residents.

Thirty of the sixty campsites are electrified but there are no sewer or water service connections. The horse-shoe shaped treed area surrounding the central ball fields serve both as campground and picnic ground. Playground apparatus is interspersed amongst the trees. Dr. Mainprize's unique structures (church, ark, castle, animals, windmill, etc.) are concentrated on the northern edge of the park.

A number of structures such as the change house, washroom and shower building, and the castle and church are of cement block construction and would not be relocated. A number of other structures such as the concession, workshop, storage shed, open air kitchen and staff housing are of varying ages and stages of deterioration. Few of these structures are suitable for relocation to a new park hence replacement costs have been assumed. A number of assets such as the water wells, electrical service lines, waterlines, and roads must definitely be replaced in a new location.

Virtually all of the maintenance equipment, playground equipment and structures should be replaced.

Current Replacement Costs:

Golf Course	
- 9 hole, sand green with irrigated fairways @ $20,000/hole	$180,000
- golf clubhouse	70,000
- new equipment	10,000
Swimming Pool	
- 25 meter rectangular concrete	$180,000
including mechanical, heating, filters, washrooms, showers, landscaping, rectractable roof	200,000
Campgrounds, Picnic Grounds	
- 60 unit serviced campgound including power, streetlights, water connections, equipment	$200,000
- workshop, maintenance, storage sheds	40,000
- Concession, lounge, caretaker residence	80,000
- Ball diamonds, sportsfields, playground equipment	50,000
- Relocation and refurbishing of unique Mainprize features, memorial gardens and stone cairn	100,000

- Infrastructure and services (access roads, parking lots, water wells and system, sewage tanks and disposal, power to park, telephones)	250,000
- Tree planting, landscaping, suspension bridge relocation, etc.	100,000
- Boat launch, marina, beach improvements	60,000
Capital Sub-Total	$1,520,000
- 10 year maintenance, development trust fund (in addition to the normal Regional Park Funding Agreement for Operations and Maintenance)	200,000
TOTAL	$1,720,000

These capital replacement costs for Dr. Mainprize Regional Park, 2.0 to 2.6 times the depreciated appraised values, are warranted considering the longer term recreational and tourism potential of the area and the great regional significance of the existing park to the surrounding communities.

In addition to regaining some of the former stature of the park, it is anticipated that additional attractions and shoulder season use of the park can be generated. Camping, picnicking, swimming and golf will be complemented by boating, sailing, water skiing and improved sport fishing. Demands for cottages can be anticipated even while Rafferty is filling, summer trail riding, waterfowl and upland bird hunting in the fall, and ice fishing and cross country skiing in the winter will, in time, lead to extended use of cottages. Additional recreational programming, such as for local senior citizens can also lead to renewed use of the park, even in winter.

It is probable that within 10 to 15 years after relocation, increased park visitation from outside the Dr. Mainprize Regional Park's membership area, such as from Weyburn, Regina, North Dakota and other areas will surpass the Regional Park Authority's financial ability or interest to adequately meet the growing needs. At such time, it is anticipated that an alternative long term arrangement will be developed to reflect the province's greater interests in the park facilities. As has been evident at Blackstrap Reservoir and Diefenbaker Lake, the province's

greater interest in parks, recreation and tourism development is usually in the form of Provincial Recreation Parks or Recreation Sites.

A long-term park development and management plan for the entire Rafferty Reservoir will include facilities and services at the southeastern end near the dam. The relocated Dr. Mainprize Regional Park's future role will be coordinated with such other parkland improvements. It is possible that when increased visitation and use of the new Dr. Mainprize Regional Park exceeds the ability of the local communities to operate and adequately maintain it, that the province could assume overall responsibility for the park and the "Dr. Mainprize Memorial Park" could become a park within a park.

It is important to realize that it will take 10 to 20 years for the newly planted trees to grow, for the reservoir to fill, for the sport fishery to fully develop during which time the area will realize its potential and attractiveness to tourists. When the park landscaping has reached maturity, the new Dr. Mainprize Park will be the most westerly, most attractive area of access for visitors to water-based recreation at the Reservoir.

The Saskatchewan Parks and Renewable Resources Park Systems Master Plan calls for the development of a new Provincial Park in southeastern Saskatchewan, partly to relieve congestion and to relieve pressure on the most heavily used provincial park in the province, Moose Mountain. Much of this current heavy use originates with visitors and cottage owners from Regina and, to a lesser extent, from Weyburn and Estevan. In order to divert increasing and future park and recreational demands in southeastern Saskatchewan from Kenosee Lake, it will be necessary to have an alternative park and an attractive resource base at least as close and accessible. A Provincial Park at the proposed Alameda Reservoir would be less accessible for Regina and Weyburn residents while a new Provincial Park on Rafferty Reservoir, along the Souris River Valley, could take the form of two or three distinct blocks or units, similar to Provincial Parks at Cypress Hills, Candle Lake or Makwa Lake. The Souris Valley (Rafferty) Park could well represent the grasslands ecosystem in the province as well as preserve and protect unique glacial and geologic features associated with the Souris Valley. A number of historic and prehistoric/archaeological features in the area in addition to the relocated Dr. Mainprize park, could be used to good advantage. Such features have excellent educational and interpretive potential for visitors and tourists.

THE NEW DR. MAINPRIZE PARK LOCATION

The Souris Basin Development Authority is fully committed to mitigating the loss of the current Park. Options such as relocating the park to a community like Midale or not relocating the park at all due to the declining and aging regional population, were not realistic and following discussions with the Dr. Mainprize Regional Park Authority, were neither acceptable nor desirable. The Regional Park Board passed a motion at their meeting, March 11, 1987, that if the Rafferty Reservoir is created, they wish to relocate the park to a new site along the reservoir.

The Authority has investigated a number of relocation options in addition to the possibility of retaining the park and Primary Grid #606 in its present location. The latter scheme would have involved two additional dams, north and south of Dr. Mainprize Park. Such an option would have permitted six oil wells to remain in their present location and continued use of a number of valley floor hay plots. The Souris River and reservoir would have been diverted through the smaller Dead Lake-Elswick Lake Channel to the north. This scheme resulted in reduced mitigation of approximately $8 million. "Disbenefits" and additional costs included the need to increase both the Full Supply and Flood Storage elevations of the reservoir by one half meter to compensate for lost storage in the Souris River Valley. Additional engineering and dam construction costs were in the order of $12.5 million. This possible option resulted in a net additional cost of $4.5 million to the Rafferty project and was subsequently rejected. Rather than raise the full supply and flood storage levels of the reservoir, with increased impacts on Lomond P.F.R.A. Community Pasture lands and critical wildlife habitat, every effort was being made to lower these elevations and reduce the upstream wildlife and agricultural impacts.

The stony and bouldery nature of the adjacent uplands, the greater uplands exposure to winds and the greater cost and difficulty establishing and maintaining trees and grass, suggested that any alternative location for the Regional Park should include some sheltered lowlands, or at least some topographic relief where wind shelter would be possible and new tree plantations more successful. Upland plantation sites could be possible if stones were less prevalent and soils more

suitable for irrigation and cultivation. Continued good accessibility from the supporting municipalities was also considered to be important.

The Regional Park Authority has not officially endorsed any relocation site. There may be two or three alternative areas with different short term and long term advantages and disadvantages. The Authority has undertaken preliminary investigations of these sites but has concentrated attention on one option at the north end of the existing Midale Community Pasture where the Dead Lake-Elswick Lake channel joins the Souris River Valley. (Figure 2)

This site, in sections 8 and 9, Township 5, Range 12 West of the Second Meridian appears to have a number of attractions including:

- it is readily accessible by road connection to primary grid #606;
- it is relatively near the existing park (5 km NW);
- it is relatively natural and undisturbed with no oil wells, access roads, batteries; etc.;
- it contains a large portion of the smaller Dead Lake Channel floor, much of which is devoid of surface stones and boulders;
- it has topographic relief ranging from 542 to 567 meters;
- it contains opportunities to access Rafferty Reservoir for all forms of water-based recreation and fishing as well as relocating land based recreation elements within the park (golf, camping, picnicking, ball fields, playgrounds, etc.);
- it can be removed from the Midale Community Pasture without seriously affecting the pasture;
- it is already provincial crown land;
- it is considered critical wildlife habitat for white-tailed deer, Sharp-tailed Grouse and Ring-necked Pheasants and these species can continue to use it;
- it contains remnants of the 1909-1910 Canadian Northern Railway (which connected to Goodwater to the west) which was abandoned in the late 1940's following loss of bridges in the Valley; and
- it contains areas suitable for water-oriented cottage development.

A useful design concept emerged from the original scheme of retaining the park in its present location. Instead of constructing two new large dams or causeways in the Souris Valley, it is possible to construct two smaller dams in the Dead Lake

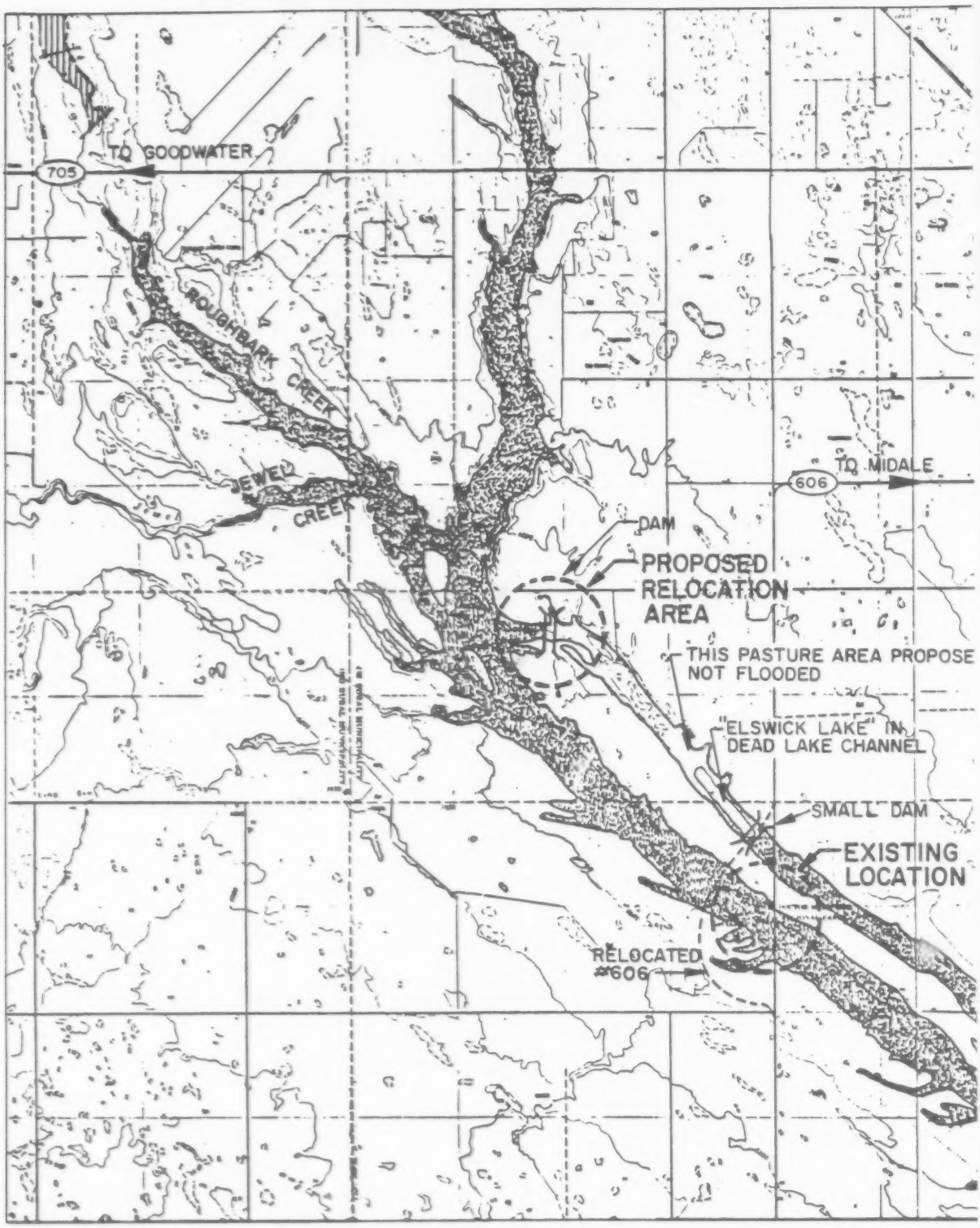


FIGURE 2
LOCATION - PROPOSED RELOCATION
DR. MAINPRIZE REGIONAL PARK

Channel. The eastern closure dam could be the reconstructed and raised #606 causeway which would be required to retain the existing #606 crossing of the Rafferty Reservoir. A second, western closure dam would be required in the northeast quarter of Section 8 where the channel bottom is already up to 5 meters higher than the adjacent Souris Valley flood plain. A small dam in this location, approximately 7 meters high and 250 meters long would hold back Rafferty Reservoir waters from inundating nearly 5 km of the Dead Lake-Elswick Lake Channel, to #606.

The proposed dam location approximately 500 meters east of the Souris River Valley will provide a natural protected harbour for boats and a marina. The northern (south-facing) portion of the channel can be shaped during dam construction to create an artificial sun-bathing and bathing beach just west of the dam. From this area, boaters, water skiers and fishermen will have the choice of going upstream or downstream in the main Souris Valley or northwest up the Roughbark Creek Valley.

There is ample space within the bottom of the Dead Lake Valley and along its edges to re-establish the 9 hole golf course (with water readily available for irrigating the fairways and greens), the camp and picnic grounds, sports fields, playgrounds and the unique Mainprize structures. There is also sufficient space for new developments such as cottage subdivisions, additional tree plantations, riding trails and corrals, interpretive trails, swimming pool, maintenance and other support facilities.

The bottom of the Dead Lake Channel between the two closure dams has an eastward slope. The existing Elswick Lake is 5 meters lower than the bottom of the valley between sections 8 and 9. Water can be pumped or released from the Rafferty Reservoir at the west end and permitted to flow, by gravity, through the landscaped park and through two or three levels of controlled wetlands before it reaches Elswick Lake. A pumping structure at the eastern dam, (#606 super grid) would remove excess water back into the Rafferty Reservoir at that point. Such a feature would have aesthetic appeal within the park as well as have use for maintaining the small wetlands for wildlife benefits.

The Authority has indicated its willingness to undertake additional site investigations and detailed planning of this or alternative park sites in 1987 to ensure that the relocation of Dr. Mainprize Regional Park can proceed rapidly and without interruption of service. The existing park will continue to be used as long

as possible but land acquisition, fencing, detailed planning and design, new tree plantation, ground preparation, construction of the closure dams and initial landscaping will be initiated in 1988 and 1989. Figures 3 and 4 illustrate, conceptually, one possible plan for the relocation of Dr. Mainprize Regional Park. The Authority will work closely with the Regional Park Board and the Regional Parks Branch of SPRC to ensure that local and provincial short term and long term interests are fully addressed at the planning stage.

PHOTO ELEVEN: Confluence of Dead Lake Channel and Souris River Valley at north end of Midale S.D.A. Pasture, looking east. A western closure dam near the mouth of the channel will create an embayment in the reservoir and, together with the eastern dam at Primary Grid #606 will protect 5 km of the valley from inundation. This area is proposed for the relocation of Dr. Mainprize Regional Park and a series of small wetlands.

(Photo Courtesy SBDA)

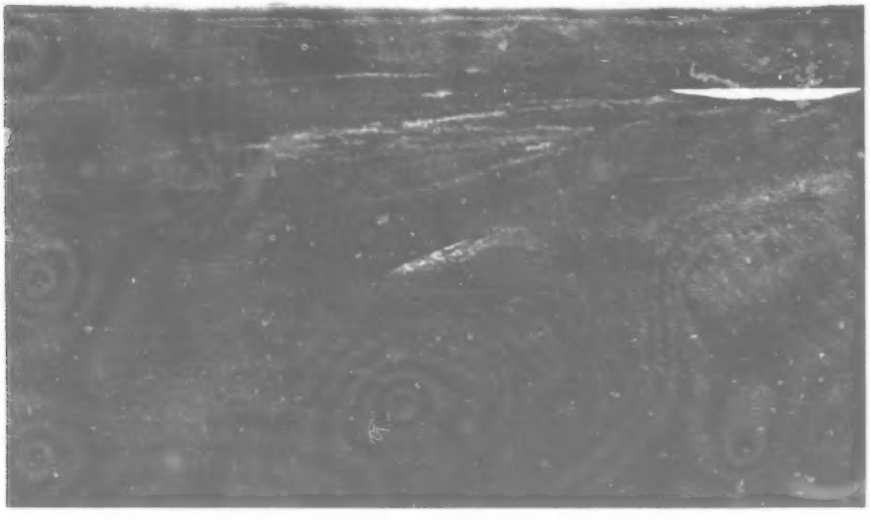


PHOTO TWELVE: Rafferty Reservoir will inundate the mouth of the Dead Lake Channel. At Full Supply Level there will be 9 metres of water in this embayment, suitable for a marina and water-based recreation.

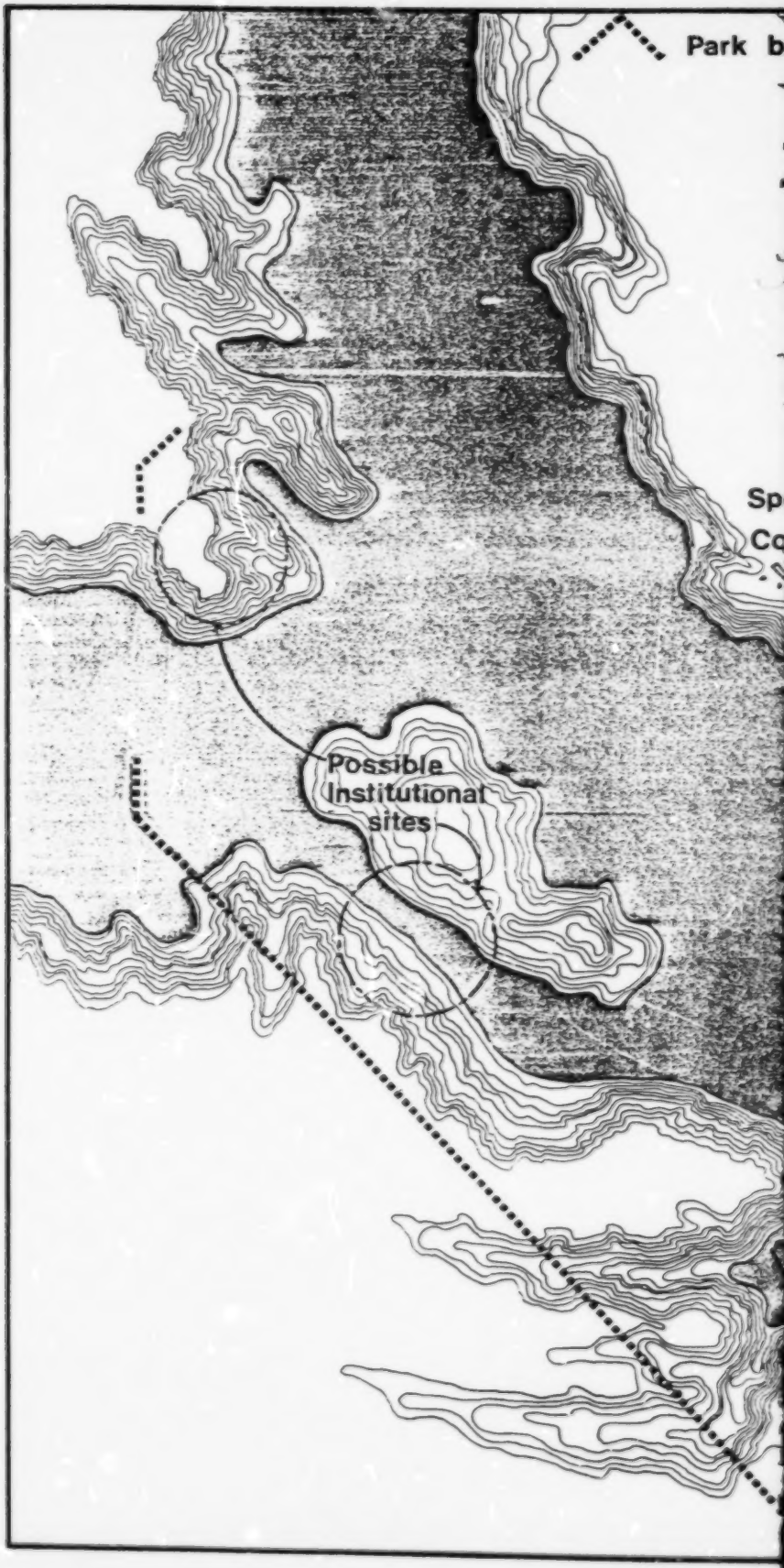
(Photo Courtesy SBDA)

PHOTO THIRTEEN: Abandoned Railroad grade along north side of Dead Lake Channel. Valley floor to the south (right center) is possible location for campgrounds, picnic grounds, sports fields or golf course in relocated Dr. Mainprize Regional Park.

(Photo Courtesy SBDA)

PHOTO FOURTEEN: Valley Floor in Dead Lake Channel to be protected by closure dam. This is one of the few sites in the area which is not strewn with boulders or disrupted by oil field activities. It is considered critical deer wintering habitat to white-tailed deer. Topographic relief will provide wind protection and interesting terrain for the relocated golf course.

(Photo Courtesy SBDA)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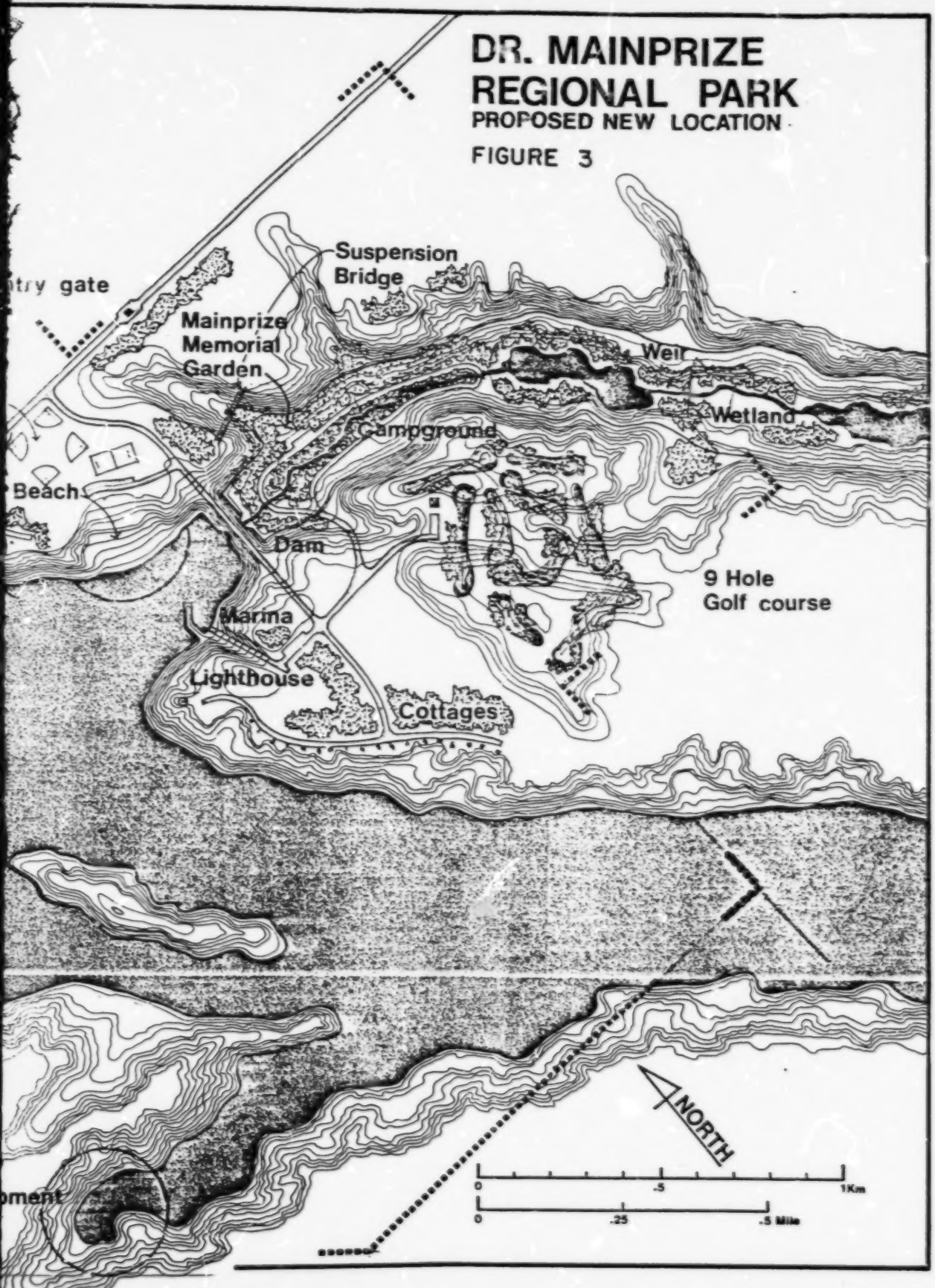
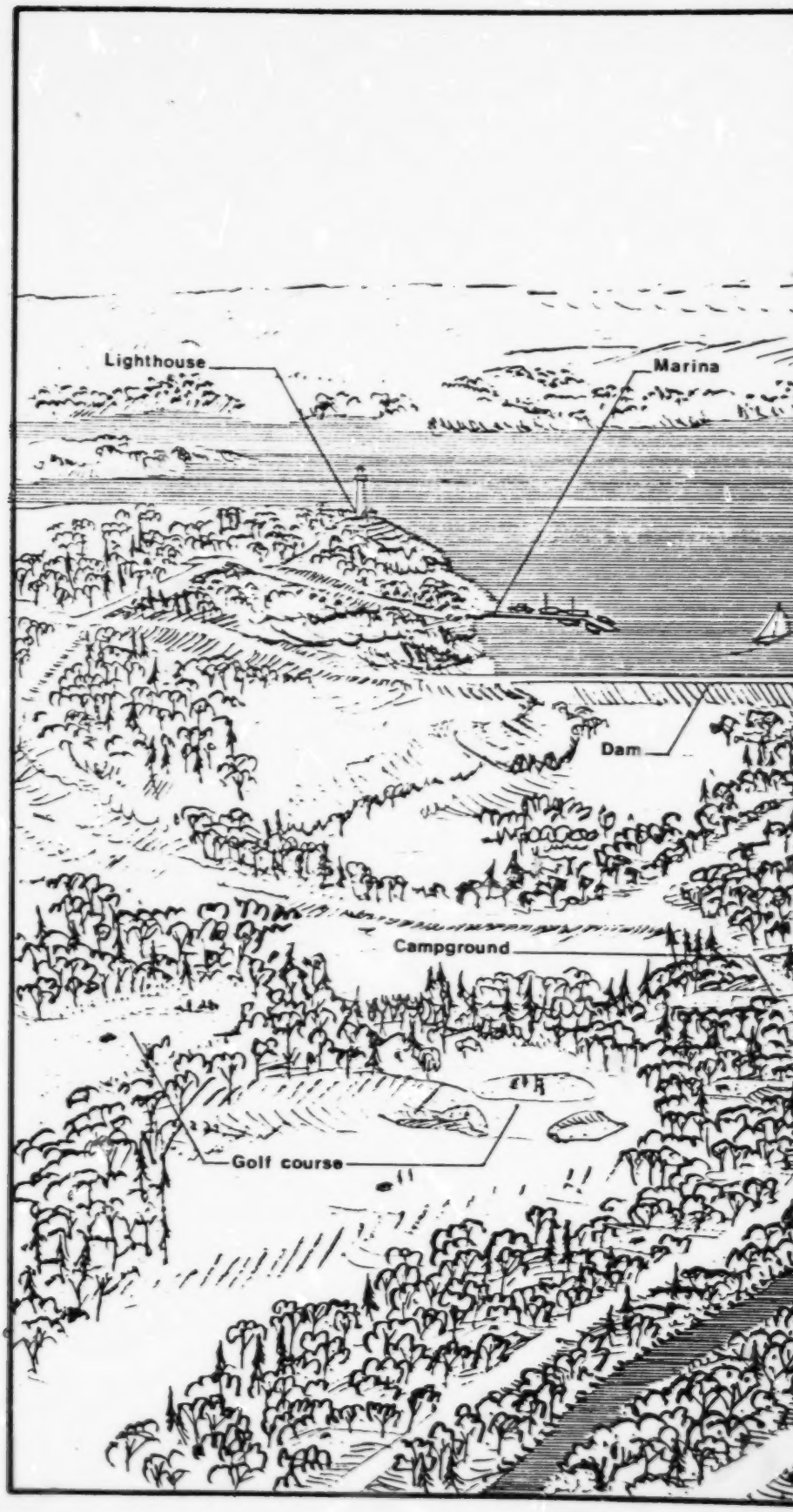
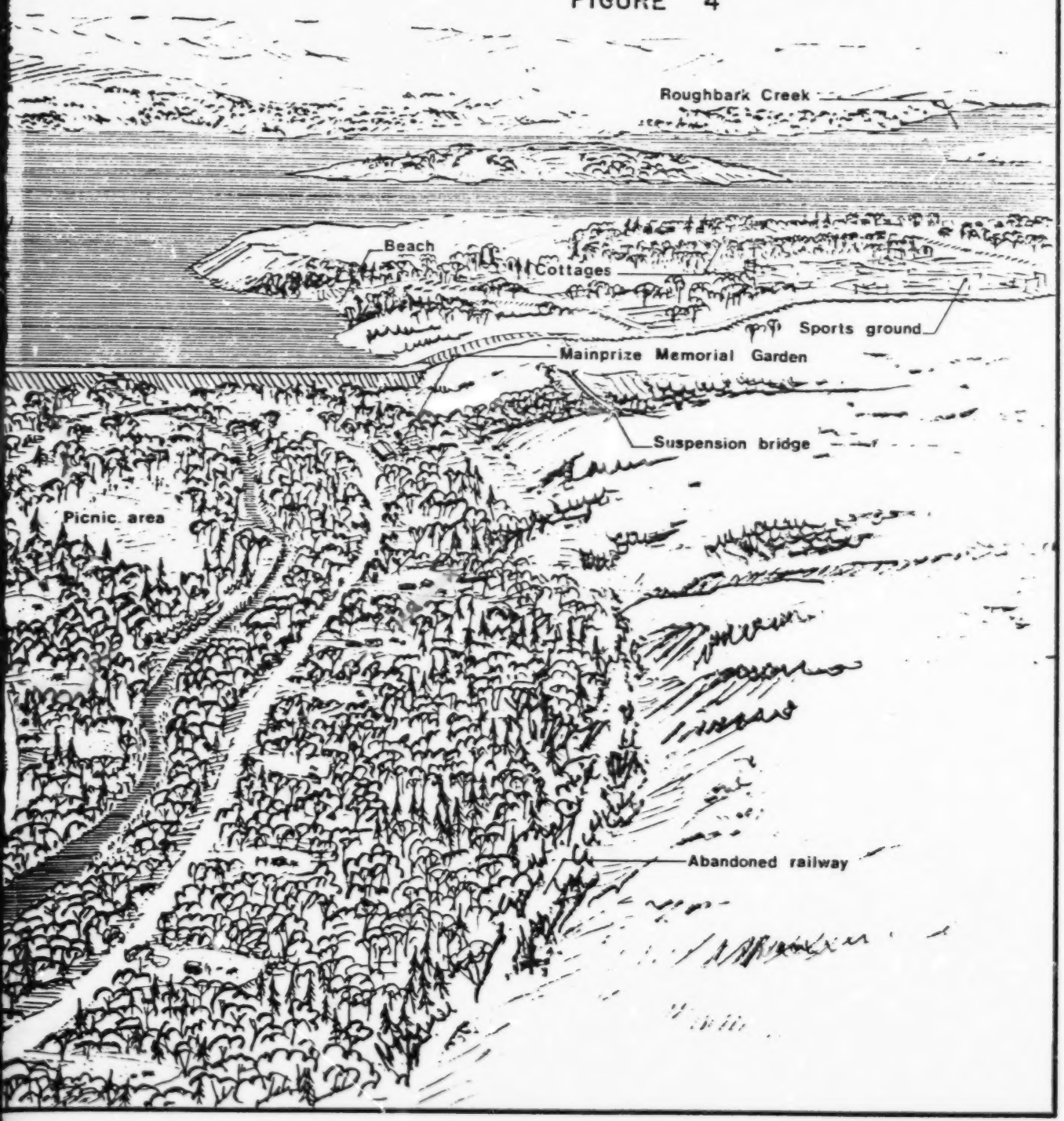

DR. MAINPRIZE
REGIONAL PARK
PROPOSED NEW LOCATION
FIGURE 3
Suspension
Bridge
Mainprize
Memorial
Garden
Campground
Wetland
Beach
Dam
9 Hole
Golf course
Marina
Lighthouse
Cottages
NORTH
0
.5
1Km
0
.25
.5 Mile


Lighthouse
Marina
Dam
Campground
Golf course

DR. MAINPRIZE REGIONAL PARK

VIEW FROM THE EAST

FIGURE 4



SUMMARY AND CONCLUSION

The Souris Basin Development Authority is committed to the relocation and upgrading of Dr. Mainprize Regional Park. $1,520,000 will be spent on the new Park, excluding land costs and the eastern and western 'closure dams'. In addition, a maintenance trust fund of $200,000 will be established to assist the Park Authority with the additional costs associated with re-establishing their golf course fairways, tree plantations and newly landscaped areas. This fund will be in addition to the funds normally provided through the cost-sharing agreements with the provincial government. While the depreciated value of the existing Regional Park is considerably less than the reconstruction cost, the additional expenditures are warranted on two counts. First, and most important, Dr. Mainprize Regional Park is much more than the sum of its physical assets. The Park is an extremely important historical land mark in the region honoring a great man who gave 60 years of his life to the people of the surrounding municipalities. Dr. Mainprize's dedication and the honor bestowed upon him in July, 1959 should not be lost. He was a man of vision, originality and innovation, as attested to by his designing and building of his own snowmobile and mudmobile. Relocation and rededication of the Park will ensure that the ideas associated with the creation of the park will be upheld for generations in the years to come.

Second, there will be a renewed and expanded interest in outdoor recreation within the communities in the region, and by tourists. While the immediate regional populations have been declining and aging, long term growth in population in southeastern Saskatchewan is expected. Attempts to divert increasing tourism and recreation use from Moose Mountain Provincial Park to another Provincial Park in southeastern Saskatchewan suggest that Rafferty Reservoir and the Souris River Valley will be the obvious choice. As a Provincial Park, the investment in the Mainprize Park will be further protected.

In recognition of Dr. Mainprize's life-long dedication to the people of the region, the Souris Basin Development Authority is recommending to the government that the lake created by the Rafferty Dam be named Mainprize Lake. The Authority has discussed this recommendation with, and obtained the approval of, the late Dr. Mainprize's immediate family and the Mainprize Regional Park Board.